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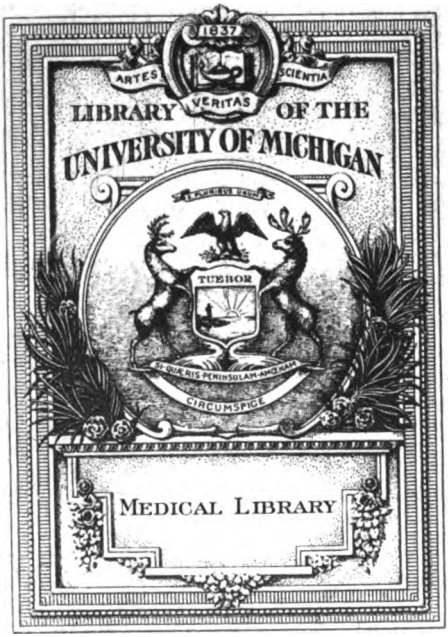

THE GIFT OF
Dr. C. F. DuBois

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OF THE

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FOR THE YEAR 1895.

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NOTICE.

The thirty-first annual meeting of the Society will be held at Mt. Clemens, June 4th and 5th, 1896.

The American Medical Association will meet in Atlanta, Ga., May 5th to 8th, inclusive, 1896.

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THIRTIETH ANNUAL MEETING

OF THE

Michigan State Medical Society

HELD AT BAY CITY,

June 6th and 7th, 1895.

ANNUAL ADDRESS OF THE PRESIDENT.

H. O. WALKER, M. D.,

DETROIT, MICH.

Members of the Michigan State Medical Society,
Ladies and Gentlemen :

First permit me to thank you for honoring me as your President, and I trust you will so aid me in the transaction of our business that we may direct the work successfully. In return for your expression of trust I had hoped to offer you an address upon some original work, but my time has been so fully occupied the past year that I have been unable to complete it.

Should we make a review of the progress of medicine and surgery, we will find that the advance in our profession during the last fifty years is far beyond that of any previous half century. In fact, our authorities at that date comprised but few men, while to-day the life of an authority is of short duration, for that intense active criticism is such that no observation is accepted as true until it has stood the test of crucial criticism. This progress is largely due to the aids that have been given us

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through the discovery of anaesthetics and a more accurate knowledge of disease, thereby permitting the surgeon the greatest opportunity for exploration, and the physician the widest field for experimentation with remedies. Sims, through the introduction of his duck bill speculum, and the employment of the silver wire suture, made him do successfully what had heretofore been failures. Speaking of silver wire as a suture, it is undoubtedly the best and safest owing to its being easily made aseptic. I notice that many surgeons are for this reason returning to its use.

The introduction of anaesthetics, such as nitrous oxide in 1844, ether in 1846, chloroform in 1847, and cocaine in 1859, made it possible for many operators rather than the few such as flourished in the days when it was necessary to fasten a patient with devices to control his struggles. Surgery had now with these aids emerged upon a new era when greater care in detail of technique could be exercised rather than rapid execution. Yet ideal surgery was not realized until the advent of antiseptics, due to the efforts of Pasteur through his studies of spontaneous generation, when, after twenty years of investigation, in 1878 he announced his results to the Paris Academy of Medicine, completely refuting the doctrine of spontaneous generation, and establishing a pathology founded upon bacteriology.

This study of bacteriology has opened a still wider field of investigation, and made it necessary that we must have at least a thorough theoretical knowledge of the subject to appreciate its importance, while every progressive surgeon and physician must do practical work in the bacteriological laboratory.

Suppuration twenty-five years ago was the rule, and meant a fight to the death of either the phagocyte or bacterium. Pus is dead phagocytes, the prevention of which is the aim of the surgeon; how well he does it is shown by the results. Antisepsis and asepsis are too often a farce. Few but believe in its efficacy, yet how few accomplish it, simply from a fail-

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ure to follow out every detail, for a weak link in a chain makes the whole worthless. The knowledge of the bacteriologist has made surgery what it is to-day—a nearly perfect art. All reverence to Pasteur and Lister. How is it with the pathology of the internal organs? The toxines and the micro-organisms producing typhoid fever, cholera, diphtheria, etc., are gradually becoming better understood, and immunity by inoculation promises much. Jenner, by accident, gave us the first evidence of immunity, which has been used empirically for nearly a century, and is now regarded as a scientific application of the principles of bacteriology. It is hardly necessary to measure the results of this method in the treatment of hydrophobia. We have not however been as successful with the uses of certain remedies against tuberculosis, yet much is promised by the nucleins. Serum therapy evidently possesses great advantages in combating diphtheria; it has not however stood the test of crucial criticism as yet.

This intense investigation has developed a large body of specialists, who in many departments have done the great wonders of our profession. Yet, with all due respect to the specialist, I cannot but feel the furore in some instances goes beyond its environment, and has done much to injure true conservative surgery and medicine. A specialist is not made in a day. He should be the product of scientific evolution.

The laxness of laws governing the practice of medicine in this country is gradually disappearing. I had hoped until this morning that Michigan had taken a step in this direction that would have been creditable; yet we have been undone by the caprice of a governor who has vetoed a bill that would have done much to improve the standing of our profession, and benefit the public. The committee on Medical Legislation which was appointed at our last meeting cannot but be complimented for their efforts in this matter, and not to speak disparagingly of the remainder of the committee, I wish to especially thank Doctor George V. Vorhees for his untiring diligence in looking after the enactment of the law for med-

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ical registration governing the practice of medicine in Michigan, which passed both houses, and would have become a law except for the cupidity of the governor.

The adoption by a great majority of the medical colleges of the United States of a four years graded course is another step in the proper direction, and a still further advance should be a more rigid entrance examination; a thorough scholastic training, a knowledge of biology, botany, chemistry, and bacteriology, should be a part of the requisites for entrance, and not a part of the curriculum of a medical college.

Recently I sent out a circular letter to all of the regular practitioners in this state, outside of our own membership, inviting them to become members of the society. I have received many responses of promises to attend, and others who fine it inconvenient to be here at this time, asking if it is not possible to become members upon application without being present. I would suggest that a resolution be offered at this meeting making it possible for a regular practitioner of this state to become a member by application, on the recommendation of two members, and referred to the committee on admissions, who would have power to pass upon their eligibility, notifying the secretary of their action. In this way we would secure a larger membership and a larger attendance in the future.

I have some hesitancy in presenting what I am about to do, that is, in suggesting the doing away with our section work. There are many attending these meetings who would like to hear all the papers read, for the general practioner comes here for the purpose of absorbing as much medical and surgical knowledge as possible, which he cannot do when the work is going on in different places at the same time. Make the session three days; the morning of the first day for general business; reports of committees, etc. on the opening of the last day; and the rest of the time devoted to scientific work. It gives the writer of a paper an opportunity to be heard by all, and not

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by a corporal's guard as is often the case in our present plan of section work. I am aware that there will be opposition by many to this proposition, yet I think the majority will agree with me.

Doctors, like other mortals, are subject to peculiarities or idiosyncrasies, in other words become hobbyists, and are frequently designated "cranks" by others possessed of another form of hobby. There is undoubtedly a great fitness in this, for were we all of one form of mind as to how we should escape from our daily routine of labor, the sameness would become monotonous and end in disaster. To have an escape from the weary treadmill of our profession is aptly expressed in the following quotation :

"To be day and night at the beck and call
  Of men who cheat, and women who lie,
To know how often the scoundrels live,
  And see with sorrow the dear ones die ;
To be laughed to scorn as the man who fails
  When nature claims her terrible debt,
To give a mother her first born's smile
  And leave the eyes of the husband wet ;
To face and brave the gossip and stuff
  That travels about through a country town,
To be thrown in the way of hysterical girls
  And live all terrible scandals down,
To study at night—in papers hear
  Of new diseases and human ills,
To work like a slave for weary years
  And then be cursed when you send your bills ;
Now just one word, don't be too hard
  On those who cannot afford to pay.
For nothing you cure the widow and child,
  For nothing you watch till the night turns day ;
You'll hear confessions and keep them safe
  As a sacred trust like a righteous priest ;
To do your duty you're not sworn
  As others must do in this world of woe,
But you'll hasten away to the beds of pain
  Through rainy days and nights of snow."

It behoves us, therefore, that we shall seek some avenue for recuperation from this constant strain. It matters little how, so that it is done, for without it we do an injustice to ourselves as well as to our clientele. Recreation, in some form suited to our inclinations and possibilities, will do much to smooth the pathway of life, rejuvenate, and make it possible

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for better work. A week or more during the year with a dog, rod, and gun, will produce better results than a car load of cerebrine or other animal extracts.

Did you ever stand on a runway on an early morn, and hear the baying of hounds, a music that surpasses that of Wagner or Strauss, or stop with unerring shot a whirring grouse, the greatest of American game birds, or cast a fly for a speckled beauty, or a gamey bass, and feel the thrill of magnetism that it produces when reeling it in. No pharmaceutical preparation can ever produce such an effect. Take a vacation at least once a year, and come home a wiser and better man.

I would remind you that, in the efforts to further our own interests, we do not forget the rights and interests of our fellows. In this connection permit me to quote, in conclusion, the following by the poet Joaquin Miller, "Down in the Dust :"

Is it worth while that we jostle a brother
  Bearing his load on the rough road of life?
Is it worth while that we jeer at each other
  In blackness of heart?—that we war to the knife?
  God pity us all in our pitiful strife.

God pity us all as we jostle each other;
  God pardon us all for the triumph we feel
When a fellow goes down 'neath his load on the heather
  Pierced to the heart; words are keener than steel,
  And mightier far for woe or for weal.

Were it not well, in this brief little journey
  On over the isthmus, down into the tide,
We give him a fish instead of a serpent,
  Ere folding his hands to be and abide
  Forever and aye in the dust at his side?

Look at the roses saluting each other;
  Look at the herds all at peace on the plain—
Man, and man only, makes war on his brother,
  And laughs in his heart at his peril and pain;
  Shamed by the beasts, that go down on the plain.

Is it worth while that we battle to humble
  Some poor fellow soldier into the dust?
God pity us all. Time oftsoon will tumble
  All of us together like leaves in a gust,
  Humbled indeed down into the dust.

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ANNUAL ADDRESS ON MEDICINE.

SOME CURRENT ERRORS RESPECTING INSANITY.

C. B. BURR, M. D.,
Flint, Mich.

Mr. President and Members of the Society:

THE gloom encircling the problems of mind which centuries of study have failed to do more than dimly illuminate, the peculiar manifestations of those diseases characterized by disturbance of the mental operations, and the frequent necessity for hospital or custodial care for those afflicted by disorders of the intellect, have caused insanity to be regarded in former times as practically outside the bounds of general medicine, and withdrawn it largely from the day-to-day experience of those treating other diseased conditions. It is by no means uncommon at this day to hear from physicians the admission "I know nothing about insanity." Sometimes, I regret to say, this expression is accompanied by a manner which indicates that, slight as the knowledge is, the desire for information on the subject is less.

The alienist, until recent years, has occupied a field unencroached upon by the general practitioner. He has lived to himself, professionally speaking, and while he has done much good for patients in his special department of medicine he has been looked upon less as physician ministering to the necessities of diseased human beings, than custodian of the deranged and irresponsible. Fortunately, however, for his

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own advancement, for the interests of scientific medicine, and above all for the well-being of patients committed to his care, he is no longer content to occupy a quasi-medical position. He has advanced his work to a high professional plane, he has introduced the hospital idea into asylum management, he has corrected evils, has reformed abuses, has adopted high ideals, has labored to remove the sentimental barriers which have separated him from the practitioner in other fields, to break through the atmosphere of mysticism which has environed the objects of his care, and remove the prejudice and suspicion with which his efforts were constantly hampered. All honor to the alienists of this latter half of the Nineteenth century, through whose existence the condition of the insane has been so much ameliorated. All thanks to brother practitioners in other fields, through whose cooperation it has been practicable to obliterate the line of demarcation heretofore existing between the alienist and the doctor, between the clinician in brain disease and the clinician in any other department of pathology.

It is not an over-statement of the case to say that the treatment of the insane has been practically revolutionized in the last fifteen years. The few text books on insanity available at the time the present generation of asylum men entered the specialty are now for the most part fallen into innocuous desuetude. The important works of Clouston, Spitzka, Savage, Krafft-Ebing, Bevan Lewis, Stearns, Regis and others have been published during this period. The professional demand for information on this obscure subject has necessitated such remarkable literary activity.

CLOUSTON, of Edinburgh, could write in 1884: "When we consider that one in every three hundred of the population is a registered, certified lunatic, the marvel is how our profession has hitherto got along so well with so little systematic teaching or clinical experience of mental disease." Now, on the contrary, in every school of consequence in America or abroad, insanity is taught clinically and didactically. The

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assistant physician no longer comes into the work of the hospital or asylum; as did your orator, with no knowledge of insanity save that derived from the cursory reading of a little book, "Sheppard on Madness," found in a preceptor's library. The recent graduate is fairly grounded in the subject, can differentiate forms of disease, would not be at a loss in general practice to prescribe for an insane patient, and would deem it discreditable to say "this patient is insane and should be sent to an asylum," giving no reason for his opinion, and not attempting a discriminating diagnosis. He can speak advisedly as to whether the patient will be benefited or otherwise by removal from home, and can apply rules for guidance of the case as he would for a case of pneumonia. In this day and age the asylum physician does not content himself with clothing, feeding and ministering to the intercurrent ailments of his patients, but hospitalizes all of them, is on the lookout for indications for treatment, prescribes his moral and medicinal measures with a true scientific spirit, and meets the varying conditions and necessities of cases on the same principles which would govern him in amputating a finger or prescribing for indigestion. What he does is intangible in great measure. He cannot always explain in what his moral treatment consists; but that it is applied with the same degree of precision which governs the general practitioner in his relation with cases of typhoid fever admits of no doubt among those familiar with his methods. He can be assisted in his work, and the public and profession brought into closer and more intelligent relationship, if a few current errors, which the general practitioner in his incidental capacity of public educator is competent to correct, are removed, as stumbling-blocks in the way of progress.

I have taken for my subject therefore "Some Current Errors Respecting Insanity," and ask you to listen patiently if what I say may seem trite or axiomatic. Be it remembered that the orator of this section is not here by his own election; he must perforce discourse on something and is circumscribed by

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certain conventional limitations. He may write of the history of medicine, or the progress of medical science; fields tolerably well worked in meetings of this character, and perhaps no longer susceptible of fruitful cultivation. He cannot be "special;" he must not be clinical; and if he may not aspire to the high plane of original investigation upon which my distinguished predecessor stood, and finds his abilities and aptitude for philosophical disquisition unequal to the demands of the occasion, he is possibly deserving of pardon if he lapses into criticism.

THE FIRST ERROR to which I would fain allude is that of regarding any form of insanity a *mental* disease. The expression is convenient but misleading. Insanity is a general term which comprises those maladies displaying prolonged disturbances of consciousness dependent upon the derangement of a bodily organ, the brain. Mental operations are functions of the brain, or, at all events, brain integrity is necessary to their perfect performance. They are performed through the muscular apparatus, and dependent for their perfect expression upon the sanity of all the tissues of the body. The late Dr. Buckham, in his interesting work "Insanity in Its Medico-Legal Relations," says: "As the elements of our experience are dependent upon sensations, it inevitably follows that if our organs of sense are diseased or disordered the respective sensations will be defective or distorted consequent upon the disease or disorder of the medium of transmission. If the optic nerve, for instance, is diseased, the true representation of the object will not be conveyed to the sensorium, nay, it is not necessary for the nerve of any of the senses to be diseased; a slight disorder consequent upon disease of other organs will materially change or modify the sensations.

> " 'All seems infected that the infected spy,
> As all looks yellow to the jaundiced eye.'

"To offer proof of that which can so readily be verified by observation is unnecessary. Such modifications are of every-

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day occurrence in the lives of physicians, and every person who has with any care noted his own feelings cannot have failed to observe the different appearances of the same scene, dependent wholly upon his surroundings, his associations, or even upon the condition of his liver, stomach or bowels.

"It is, then, indispensably necessary to a true representation of the object in the sensorium that the organs of transmission should be in health. From the primary impression on the terminal branches of the nerves of sensation, through all the degrees of progress, as sensation, ideation, and volitional impulse, to the external manifestations of these mental operations, the physical media must be healthy if the manifestations are normal; and, *vice versa*, if the media are diseased or disordered; *pari passu*, the manifestations of the mind's operations will be abnormal, disordered, some of which disordered mental manifestations are called diseases of the mind, insanity, when in reality they are the result of diseased or disordered physical mèdia, while the mind, as far as we know (assuming for it an existence as a distinct entity) is not the subject of disease."

He further says: "If the mind can be diseased, then, if the disease be sufficiently prolonged and intensified, *the mind must die*. Having no direct or primary proof of the existence of mind, it must be considered in the light of the secondary evidence furnished by the manifestations of its operation through physical media."

On what theory, or even hypothesis, other than that of diseased physical media, can the medication of the insane be otherwise than irrational and absurd? What do physicians know of the constitution of the mind, on the assumption that it is a distinct entity and subject to disease? Or what do physicians know of the therapeutic action of material remedies on an immaterial mind? The idea of curing an incorporeal, intangible entity by the use of material remedies is so utterly absurd that it is difficult to suppose a man sane who entertains it. But on the theory that the disordered mental manifesta-

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tions are the result of diseased physical media, the exhibition of material remedies to cure material disease is rational and proper; and if, by the administration of suitable remedies, disease is removed from the media, then the manifestations of the mind's operations again become normal and natural; and it is notorious that such is the effect of medical treatment in many cases of insanity. When a case of insanity is cured by medical treatment, it is obvious that physical, not mental, disease has been beneficially treated, and therefore those cases which are so cured were unquestionably cases of insanity due to physical causes; *id est*, "diseased media." Had the sage who, centuries ago, wrote "*mens sanæ in corpore sano*" that idea in his mind?"

Pardon the lengthy extract from the pen of this distinguished author, a resident of Michigan during the best years of his life, and a member of this society. It is so good and so creditable to its author and the profession of Michigan that I could not forbear quoting it *in extenso*.

BLANDFORD says: "What then, you ask, is meant by this legal term 'unsoundness of mind?' In what way does it become a branch of medical study and practice? By what application of the art and science of medicine is it to be removed? The answer is that unsoundness of mind is but another term for disorder of the human brain, or rather of that portion of nerve matter which has for its function that which we call mind and mental operation."

MERCIER says: "Not only do the laity regard insanity as a disorder of the mind, but all the numerous medical definitions of insanity, and every writer on the subject has proposed at least one, however much they may differ in other respects, agree in this, that they regard insanity solely as a mental disorder. This is the first misconception of which the student of insanity has to rid himself. Insanity is always regarded as a disorder of the mind. It is not so." He further says: "Insanity, we find is a disorder of the adjustment of self to surroundings. This adjustment of self to surroundings is effected

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by the highest of all the nervous arrangements, and the central and primary factor in insanity is the disorder of these arrangements. Dependent on this central disorder are other disorders; first, conduct, which it is the function of the highest nervous arrangements to actuate, is disordered: and second, consciousness, which accompanies the workings of the highest nervous arrangements, is disordered."

SPITZKA, with his accustomed terseness and directness of utterance, says: "Insanity is a term applied to certain results of brain disease and brain defects which invalidate mental integrity. It is inaccurate to state that insanity is itself a disease. It is, strictly speaking, merely a symptom which may be due to many different morbid conditions having this one feature in common, that they involve the organ of the mind."

Accustomed, as we are, to speaking of those diseases of the brain which involve consciousness as mental diseases, expressions of the nature of these read, are apt to produce shock and antagonism. Viewed in the proper light, however, their rationality becomes manifest. Take for example the intimate connection between the emotions and their physical expression. We are permitted no opportunity to regard the one apart from the other. What mean the heart-ache from bad news, the pallor of fright, the frown of dislike, the flush of anger, the smile of satisfaction? It is not mere poetic license which refers strong depressing emotions to the chief organ of the circulatory apparatus, but an indication of the indissoluble union of the mental and vital functions. It is not imagination alone that associates them with the stomach. Let an emotion be intensified, as observed in some forms of melancholia, and there appear all sorts of delusions referable to the abdominal organs. As a matter of fact, the personality is made up through sensations carried to the brain from bodily organs, and registered in the organic memory. Our personality at any moment represents the sum total of these impressions. When this outflow and inflow of nervous energy are normal, we experience a sense of well-being; when the current is ex-

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cessive, maniacal manifestations, exaltation, too great buoyancy appear; when reduced, depression may display itself, and find its extremest expression in melancholia. It is no unusual experience in hypochondriacal melancholia to hear the complaint of absence of the abdominal organs. The patient will not eat because he believes he has no stomach and cannot digest his food. The nervous current being interrupted by the depressed cerebral tone, disturbances of consciousness appear, there is a misinterpretation of organic sensations, and a delusional state develops.

I well remember, many years ago, treating a patient who complained of a mouse within the abdomen. He was accustomed to strike himself with great violence for the purpose of killing the mouse. It was discovered post mortem, that he had probably for years suffered from chronic peritonitis. The epiploon was a mere fleshy band extending diagonally across the abdominal cavity and attached by inflammatory adhesions to the pelvis. Similarly in kidney disease, in disease of the heart, and disease of the lungs, there may appear a variety of delusions consequent upon disturbances of nervous transmission and registration. The idea of poison is common among tubercular patients; of infernal machines operating upon the body in cases of internal tumor; and of poisonous gases and choking from disturbance of the heart's action. Every case of insanity is attended by reduction of physical force; in every instance its cause is to be looked for in a bodily condition, either an arrest of cerebral development from evolutional or ante-natal causes, or in physical wear and tear. My experience teaches that the so-called moral causes of insanity operate through the physical system. Grief, care, anxiety, domestic unhappiness produce disturbances of the mental operations through interference with sleep, appetite and the bodily functions. It is true that a wide difference in the susceptibility to emotional causes of insanity exists in different individuals, but this is accounted for by variations in organization and development.

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A proper recognition of the physical basis of insanity is an indispensable requisite to scientific treatment. In every case of acute insanity, a reduction of nervous energy, an undue expenditure of nerve force, are taking place. The balance between waste and repair is lacking, and the aim of the physician should be to conserve the physical energies, build up the strength, and restore the lost balance. While excitement should be curbed and checked and kept within bounds, the danger of increasing it by injudicious restraint should ever be borne in mind, and where facilities for proper exercise, quiet, and freedom from irritating control are not attainable at home, these should be early afforded the patient by a change in surroundings.

ERROR NO. II is the legitimate child of ERROR NO. I. From the confusion surrounding the subject, a legal theory and a medical theory of insanity are current. The relation of crime and irresponsibility has been the fruitful source of medico-legal tangles discreditable alike to both professions, and particularly prejudicial to ours. Fortunately the ancient and absurd legal test of insanity, an ability to discriminate between right and wrong, is fast falling into decay. Few indeed among the insane but have knowledge of right and wrong in the abstract. The ability to abstain from the wrong and do the right, however, may be, in the same class of cases, absent. Irresistible impulse, the result of impaired volitional control, may exist in the mind of one insane who has a perfect recognition of the calamitous consequences which might result from his infirmity, and an earnest desire to repress morbid impulses. I have in mind the case of a gentleman, formerly under treatment in the Eastern Michigan Asylum, whose knowledge of right and wrong was as good as my own, but who at times was seized with an impulse to kill his wife, an impulse he found it impossible to resist, notwithstanding his devotion to her. On this account he sought refuge in the asylum, and did not dare separate himself from its restraining influences, al-

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though free while there from any homicidal or dangerous tendency. Of late the legal precedent has been established in at least one celebrated case of homicide in the east, of admitting the insanity of the homicide, but condemning him to imprisonment as responsible for his act. It strikes me that on no tenable medical ground can this be defended, and that it amounts practically to a judicial begging of the question. If on the ground of public expediency it is desirable to punish an insane criminal, this excuse may be employed with better consistency than to adopt the feeble makeshift of limited responsibility in insanity. No expert can determine the strength of an impaired will, no jurist can measure the force of delusional impulsion. Incidentally it may be remarked, that the medical jurisprudence of insanity in Michigan is improving vastly. It is becoming in the courts more and more a rule of practice in doubtful cases, or in cases of suspected feigning of insanity among criminals, to have the truth determined by a medical commission. Much time, expense, and discomfort are saved by this wise legal provision. Concerning the commissions, of which I have known, it is but just to say that their work has been well performed. No important mistakes have been made, no injustice has been done. Medical men may do much good by favoring the appointment of such commissions. Let them advocate them and urge that they shall be composed of men of high character and attainments. As to commissions themselves, if after rigid investigation, doubt still exists as to the merits of the case, this doubt should be frankly stated. Nothing is gained in court or elsewhere by assumption of knowledge. No opinion should ever be signed which cannot afterward be fully defended if occasion demands. Above all, jealousies or prejudices should not be permitted to interfere with harmonious and temperate action. By these means an exalted plane of usefulness will be attained, the profession elevated, and many of the too frequent discreditable exhibitions of partisan expert testimony be avoided.

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The old question as to what constitutes "legal insanity" and what "medical insanity" may obtrude itself sometimes, but with advances in medical jurisprudence it must less and less frequently appear. Spitzka says: "On some occasion the question of defining what is called legal insanity may be presented to the reader of these lines. When that question is asked he may safely challenge the questioner to show him a broken leg or a case of smallpox in a hospital ward which is not a broken leg or a case of smallpox in law, to show him a tumor or a softening of the brain which is meningitis or sclerosis in law, or to define the conditions under which any disease symptom becomes an indication of health. When these conditions are complied with, and not until then, may the physician attempt to define 'insanity in law' as distinguished from insanity in science. In the meantime he may rest contented with the dictum of one of the best legal authorities that that cannot be insanity in law which is insanity in science, just as nothing can be a fact in science and a fiction in law at one and the same time."

These are high moral grounds and the words have a gratifying ring. Too literal construction of them, however, may lead the practitioner into Error No. 3, that of applying the strict medical test in opinions as to testamentary capacity. It is manifestly just that in the disposition of property considerable latitude should be given, and that lines concerning delusions, eccentricities of conduct, and perversions of feeling should not be too closely drawn, provided it is clear that the infirmity of judgment and will under which the testator is laboring does not lead him to make a disposition of his property which he would not have done had the infirmity not been in existence. Stearns lays down the principle that "only when the mind has become so far impaired that the person is unable to properly understand the relations he sustains toward his heirs-at-law or is influenced in his feelings toward them or others by delusions or unjust suspicions and insistent ideas;

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or when he becomes incapacitated to understand the immediate effects of his will upon the members of his family, or their respective claims upon him, or his own duties and responsibilities toward them; or, again, has been subject to undue or improper influences to such an extent as to will away his property from his legal heirs to others whose claims are not valid, or otherwise make wrong disposition of it, will the court be likely to decide that the person has not sufficient testamentary capacity?"

This is a good doctrine. The existence, for example, of the delusion of unworthiness to live or of immaculate birth, would not necessarily prevent the disposition of property in accordance with well recognized principles of right and perfect consistency. It is probable that a considerable proportion of patients suffering from melancholia with depressing delusions would be able to make wills with perfect correctness and unprejudiced by morbid judgments.

Courts have held good wills made by insane persons in asylums, and "patients with insane delusions that did not affect the provisions of the wills, have been held by the highest tribunals to have made good wills."—(Clouston). Savage says: "If a will is distinctly the representative of the desires expressed by the individual during his life, it would be upheld, although the person could be proved to have been insane." I have myself known a patient whose case had proceeded to extreme dementia to make a valid will. The patient was barely able to answer the simplest questions in monosyllables; indeed, to all appearance would reply "yes" indifferently to questions. The disposition of his property happened to be in accord with right and was looked upon as a too tardy act of justice. Notwithstanding expert testimony as to his incompetence (testimony which it was impossible for those to escape giving who were familiar with his mental condition) his will was admitted to probate.

ERROR No. IV, is that of regarding patients "sane on all

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subjects but one." It is the extremely exceptional patient of whom this can truthfully be said. Insane ideation is prone to manifest itself in a single delusion or set of delusions, the judgment upon other matters being apparently unimpaired. The capacity for indulging a fixed delusion, however, argues a serious weakening of the logical apparatus. There is reasoning from false premises or conclusions are drawn from totally inadequate data. There is also impairment of the ability to correctly group concepts to form judgments, or judgments to form new judgments. Cerebration is usually in these cases affected more or less in its entirety. There will be found shades of impairment in memory, faulty perception, lacklustre of intellect generally, and disturbances of will and inhibitory control. Of one class of cases (the paranoiac) it can more properly be said than of any other, that a patient is "sane on all subjects but one." Here the logical thinking apparatus is intact, according to Krafft-Ebing, reasoning being correct but from false and inadequate premises. In this class of cases, however, change of environment or habits is likely to affect the character of the delusion and the form of its expression.

Discussing this subject I am led to speak of ERROR No. V, the belief in "harmless insanity." The existence of an insane delusion on the part of a member of any community is a menace to its safety. The more natural the patient in his habits and daily walk, and the more plausible in conversation the greater the menace. Graveyards are recruited constantly through the conduct of the "harmless crank" "sane on all subjects but one." The paranoiac, unrecognized politically, without encouragement in his inventions, disregarded in his efforts toward social preferment, teased by the trying small boy, led on by the trifling and inconsiderate, who for a moments diversion tempt him to still greater flights on the wings of his delusions, has suddenly become an avenger. He slays the supposed author of his troubles believing himself a public

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benefactor. Thus did Guiteau, thus did the slayer of Carter Harrison. It is the duty of the medical profession to keep ever alive in the public mind the responsibilities it assumes in tolerating in its midst the "harmless" insane person.

ERROR No. VI is that loss of memory is necessarily an accompaniment of insanity. Except in cases of dementia, paretic dementia, and chronic forms of disease, this may not be a a conspicuous failing.

ERROR No. VII is the belief that an insane person's delusion should be accorded with. "You are my brother, aren't you?" or "don't you believe I made the world?" the physician will be asked. Ignore such questions if possible and the patient is not too persistent, but if called upon to answer be perfectly honest and insist upon the attendant and family bearing the same attitude toward the patient. A mere assertion of a delusion, provided confirmation of it is not asked, need not be met by a negation, but one should never permit himself to fall into the error of deceiving through motives of expediency. "He is the first man that helped me," said a patient of mine pointing to an attendant standing near. "I asked him if I was a prophet and he said 'no, you are not,' and it set me to thinking. At home when I said 'do you see that bright light coming out of my side?' they all replied 'Oh, yes; we see it distinctly; it is very dazzling.' They confirmed me in my false notion." Argument rarely effects change in delusional ideas and need not often be resorted to, but truthfulness and candor in dealing with patients should never be departed from.

ERROR No. VIII comes from applying the test of delusions to all cases of insanity. I know a conscientious and competent physician who will not certify any patient as insane who does not display delusions. Many cases of dementia, a large number of cases of senile dementia (among the most difficult

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and trying which the alienist is called upon to care for), and occasional cases of melancholia would, under this hard and fast ruling, be debarred from hospital privileges in Michigan. States of mental depression amounting to complete gloom, and despair even to suicidal impulsion, do, I am satisfied, occasionally exist without manifest delusions.

What marked kinship exists between genius and insanity? I am inclined to believe that ERROR No. IX, may be found in the oft repeated assertion that there is such. That geniuses become insane through too close application in some particular mental groove is possible, but I am indisposed to think that the existence of genius, properly so-called, is a menace to the person's mental well-being. If his invention or his literary efforts occupy his entire working hours, interfere with his rest at night and prevent him from exercising and taking food at regular periods, the physical causes of insanity become operative. If he occupies himself in one line to the exclusion of every other diversion and mental exercise, his horizon will be apt to become contracted, but this does not constitute insanity. Insanity is "a prolonged departure from the individual's normal standard of thinking, feeling, and acting." Habitual exercise of normal faculties in one particular line, would not cause the individual to be thus classed. It has been said of almost every writer of prominence in poetry and philosophy, that he was mad, sometimes because he took opium, sometimes because he did not pay his bills, sometimes because he carried his money in his hat. The excessive development of the imaginative faculty in poetic constitutions, has given rise to such statements. The isolated life, the narrow view, the speculative turn of mind, have impressed contemporaries with the variation from conventional lines of conduct. The error has arisen from judging of the mental action of a single individual by an arbitrary standard for men in general, rather than looking upon such erratic conduct as is present in the light of deviation from the individual's normal.

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As a matter of fact, the difficulty has been that every unprofessional body has regarded himself "something of a doctor" when speaking of insanity. Remarks, such as this, by Kate Sanborn, in her work on the "Vanity and Insanity of Genius," have too long passed current for expression of truth: "Taine is right when he declares that the difference between a mad man and a man of genius is not very great. Napoleon, who knew men, said so to Esquirol." What forsooth, had knowing men to do with passing upon the question of disease affecting the mental operations? She further says that "It is visionary imagination which feigns the phanthom of the madman and creates the personages of an artist, and the classification serving for the first may serve for the second." She has the audacity indeed, to speak of Dickens thus: "The imagination of Dickens is like that of mono-maniacs. To plunge one's self into an idea, to be absorbed by it, to see nothing else, to repeat it under a hundred forms, to enlarge it, to carry it thus enlarged to the eye of the spectator, to dazzle him and overwhelm him with it, to stamp it upon him so tenaciously and impressively that he can never tear it from his memory, these are the great features of this imagination and style. In this David Copperfield is a masterpiece." What a lame and impotent conclusion—Dickens mad because he wrote a vigorous story depicting characters full of intensity and strength. Apply this reasoning to the book of the authoress herself, who has written with fervor and persuasiveness, and has manifestly argued herself into a belief in her conclusions, however erroneous they may appear to others. Is this insanity? "Byron's blood," she says, "was deeply tainted with maniacal infusion" (whatever that is) and "his wife stated her belief and that of her advisors, that Lord Byron was actually insane." His wife, it appears, with rare diagnostic ability, had discovered "thirteen instances of absolutely insane conduct in him during their short companionship." Whether any of these insane acts consisted in going to bed with his boots on, or arose from double vision, after

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a gentlemen's dinner party, does not appear. Much stress is laid upon his doleful fancy respecting the future. "I picture myself slowly expiring on a bed of torture, or terminating my days like Swift, a grinning idiot." Evidence of this character is entirely inconclusive. Disappointed ambition, infirmity, the malaise after a night at the club, might have produced in one of Byron's temperament all this foreboding of evil. Strength of expression exalts the words into the prophetic in this author's mind, whereas, calmly viewed, they are seen to merely voice the unexpressed plaint of thousands of human beings disaffected with the world and conscious of physical weakness or mental letting down. A writer in the "Encyclopedia Brittanica," speaking of his marital relations, says: "A wife who could coldly ask Byron when he meant to give up his bad habit of making verses, possessed a terrible power of annoying such a man. Her perfect self-command and imperturbable outward serenity, her power of never forgetting an injury and taking revenge with angelic sweetness and apparent innocence of vindictive intention, must have been maddening." This is surely a delightful picture of wifely devotion. With such a habit of mind it is not difficult to understand that a wife might develop in an irascible and egoistic husband, thirteen times thirteen evidences which would pass for those of insanity among the uninitiated.

The hallucinations of Sir Joshua Reynolds, who imagined he saw figures of beings in trees, as he walked; of Pope, who once saw an arm come out of a wall, and asked his physician whose arm it was; of Coleridge and DeQuincey, in the cerebral excitation consequent upon indulgence in opium; or the absent-mindedness of an Ampere, who brought a bottle of wine from a neighbor's cellar, are not to be regarded as necessarily evidences of insanity. As a matter of fact, there is too much amateur and unprofessional writing on this subject. Great geniuses have usually been great brain workers; have frequently burned the nervous candle at both ends; have too often resorted to stimulants and opium to excite imaginative

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power; have led profligate and dissolute lives under the temptations and flattery with which they were surrounded, and have placed themselves under conditions which jeopardized the integrity of the nervous system.

That there is any legitimate relationship between genius and insanity, may be disputed. I have not, in my experience, discovered such connection. Savage sums up the matter as follows: "I have incidentally referred to genius in its connection with eccentricity and insanity. I am hardly prepared to give a definition of genius, though I would call attention to the fact that it is usually associated either with some special incomprehensible faculty for the dramatic portraiture of self-existent abnormal emotion, or altogether dependent upon a simple over-development of an individual faculty of mind. The first, in a sense, we may call the genius of art; the latter, that of science. With regard to genius, I must say that it is an exception to find patients with unusual capacity of any kind among the inmates of an asylum. There may be found 'specialists' of every character and degree, that is, men with persistence in limited pursuits; thus, I have known a patient in Bethlem who devoted years to the delicate polishing of pebbles; and another, whose one object in life was to clean windows; while the specialty of a third was more limited, for his sole aim was to keep bright the brass knobs of the water taps. Therefore, from the point of view of the superintendent of an asylum for acute cases of mental disorder, I can definitely say that it is rare to meet with extraordinary ability among the insane. On the other hand I must, however, admit that in my experience of people out of asylums, who have been credited with genius, I have met with many who possessed marked mental peculiarities and eccentricities. It appears as if there were for each ordinary person an average quantity of nervous power and energy to be expended, and if a larger amount than usual is got rid of in one direction, there naturally results a deficiency in some other quarter; in fact, there is loss of balance. Want of balance fairly describes the

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mental condition of many a genius. How often, for example, has one met with a man of letters, the man of taste and of energy, who objected strongly to being controlled in his lower or more animal tastes? Thus it happens that so many men of genius have given themselves liberty, if not license."

The expression that "we are all more or less insane on some subject," means nothing to an alienist, and very little, I fancy, to the many who so frequently employ it. ERROR No. X, on the part of the physician, is the neglect he sometimes displays to correct impressions of this character.

I do not advocate the position of schoolmaster abroad, or persistent pedagogue for the medical man, but he has abundant facilities for removing popular errors and instilling correct ideas about many things. Insanity means nothing to him who confounds it with eccentricity, ebullition of temper, ignorance, illogicality or congenital lack of inhibitory control. Unless there is a deviation from the normal standard (which deviation may display itself in one case in total change, in another in exaggeration, and in a third in slight perversion of natural characteristics), natural organization, lack of education or discipline must be held accountable for conduct, and not insanity. In judging of the mental state, ranting expressions such as that of Dr. Johnson, "I have been mad half my life, or at least not sober," should not be taken too seriously.

ERROR No. XI. I have frequently been consulted in times past, concerning the possibility of obtaining a divorce from one suffering from insanity. Occasionally the person has come armed with a letter from his physician, sympathizing with the proposed step, and setting forth the difficulties which the husband with, too frequently a large family of children, experiences in the absence of a housekeeper; or on behalf of the wife, the trials undergone in the past, and the fears for the future in the possible contingency of the patient's coming home. The afflictions suffered by some wives living

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with insane husbands, whose tempers, naturally none of the best, have not been mellowed by disease, are oftentimes very great. Natural compassion would occasionally lead to favoring the contemplated step, not only on account of the family, but on the grounds of public expediency, and I am not surprised that the family physician, knowing intimately the necessities of cases, and sharing the confidence of sorrowing and deserving households, should now and again lend a willing ear to appeals for assistance in severing the legal bonds which have become so irksome. Advice to this end, however, is misdirected, sympathy unavailing. The statutes of this state do not permit divorces on the ground of insanity, and the would-be divorcee may be saved expense and embarrassment by timely advice from her physician. The enactment of laws permitting legal separation on the ground of insanity has been attempted in Michigan, but has failed. Legislators have feared to open the doors to injustice by placing upon the statute books any act which might militate against the right of a deserving individual in affliction to the consideration and support of him or her who has assumed the solemn vows of matrimony. In a case, indeed, which came to my knowledge where the mother and daughter of the wife were favorable to the husband's obtaining a divorce on the ground of deception as to the existence of confirmed epilepsy at the time the marriage was contracted, the courts in an adjoining state to which the husband had moved, refused to grant a decree. I do not now remember of divorces from insane persons to have been obtained except in cases where I believed misrepresentation had been made, or where there had been failure to comply with some legal requirement as to the service of subpœna.

ERROR NO. XII. It is occasionally remarked that one who talks much of suicide will not be apt to terminate his existence by his own hand. The public should be taught to beware of this false doctrine. Several successful suicidal attempts have been made in my experience, by patients who had given ample warning of this intention. The most shocking act of

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the kind that I call to mind was made by a patient who repeated over and over "I want to kill me, doctor; I must kill me," for months before she succeeded in carrying the suicidal inclination into execution. In melancholia it is never, in hystero-melancholia seldom, safe to place perfect confidence in the patient. The hysterical are, as we know, wont to threaten self-destruction to alarm and give concern to relatives whom they are pleased to regard inattentive or unsympathizing. For years I accepted, with a large grain of allowance the direful threats of this class of patients, and was prone to construe them in a Pickwickian sense. A rude shock awakened me to the danger of placing too much reliance upon these preconceived views. It should not be forgotten, furthermore, that even where no suicidal determination actually exists, an overt act, designed to alarm and committed in the expectation that it will be thwarted, may result fatally.

ERROR No. XIII. Alienists are frequently called upon to meet an objection to hospital care, raised by friends of patients that the association of one whose mental operations are disturbed with others similarly afflicted, will work harm to the individual. This idea is founded upon an entire misconception of the facts. One is perfectly safe in saying that not one patient in a thousand is injuriously affected by association with others. Such association in the vast majority of cases, so far from being hurtful, is extremely beneficial. A self-centered patient is diverted from contemplation of his symptoms by the society of his neighbors. He recognizes the morbid states of those about him, and if mental manifestations in his own and some fellow sufferer's case, are of a similar character, the one who has felt himself alone in distress, finds a foil to his trouble in the affliction of the other. If in contact with one who has suffered from similar symptoms and improved, the relation of the personal experience of the latter is often beneficial. A melancholiac may be diverted from morbid contemplation by the conduct and conversation of one having maniacal exaltation. I well remem-

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ber, a number of years ago, that a patient, suffering from extreme mental confusion, depression, and distressing delusions, among which was the fear of poison, was placed in a hospital ward, where there was temporarily being treated, a patient laboring under mental excitement. This patient talked incessantly and incoherently; was gentle in her manner, but very earnest. She conceived a fancy for the depressed patient and directed talk to her. The depressed patient became interested. In her confusion she could not imagine what the other meant by her disjointed words, spoken with all the earnestness of the most accomplished advocate. Her attention was strained to the uttermost. There was not room in her consciousness for another concept. She studied and studied but could not comprehend. The attendants, noticing the ascendency of the one mind over the other, gave into the charge of the excited patient the administering of food to the one depressed. It had been invariably refused previously, but given along with the entertaining talk, there was no opportunity for delusions to assert themselves. She accepted food unhesitatingly, improved with great rapidity, recovered, and has since remained well these many years. Her companion also recovered, thanks in a measure no doubt, to her unselfish interest in the invalid. At the expense of digression I would here remark that the excited patient must have had a singularly pure mind. With all the incoherency, the incessant and meaningless utterance of words, words, nothing but words, without the slightest relation or dependence one upon the other; with all this not one objectionable or offensive word ever passed her lips. I regard this truly remarkable. Such incoherency is rarely seen. It seems almost incredible that it could be present without any evidence that objectionable words were ever known to the speaker or had ever been uttered in her presence.

You will frequently find occasion to correct ERROR No. XIV in the mind of an insane person's friends, who fear that home-

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sickness from separation will work injury. Homesickness in one insane is not an undesirable feeling, and if present does the patient no harm. In the natural desire for home scenes, the alienist finds one of the most important curative agencies and a great stimulus to endeavor. Substitute homesickness, a natural sentiment, for a delusion and you are supplanting a morbid with a natural idea. If your patient's friends believe that the desire for home, while the disease is uncured, demands a discontinuance of hospital and a resumption of home treatment, you may safely argue against the notion. I do not remember a single case of the vast number I have seen where the desire for home militated against the well-being of the patient or was, in fact, other than helpful.

ERROR No. XV. I think there is a general error respecting the relative liability of brain-workers and hand-workers to insanity. As a matter of fact, hard manual work appears to break down more men and women, proportionately, than brain work. Statistics of the Eastern Michigan Asylum show 2,965 of the former, to 848 of the latter, in the total admissions for a series of years, or approximately three and one-half times as many hand-workers as brain-workers. Unfortunately, it has been impracticable to extract from the state census of 1884, owing to the classification there existing, accurate information respecting the relative proportion of the two classes. In the nature of the question no absolutely exact division is practicable, and any division upon the lines mentioned must be more or less arbitrary, but it is my belief that the following estimate will not depart far from the truth.

The state census of 1884 is as follows:

All occupations	630,852
Agriculture	237,192
Professional and personal service	161,388
Trade and transportation	69,080
Manufacture, mechanical and mining industries	163,192

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Of hand-workers I have taken from above:

Agriculture	237,192
Three-quarters of those engaged in trade and transportation	51,810
Three-quarters of those engaged in manufacture, mechanical and mining industries	122,394
Total	411,396

Of brain-workers there remain, consequently:

Those engaged in professional and personal service	161,388
One-quarter of those engaged in trade and transportation	17,270
One-quarter of those in manufacture, mechanical and mining industries	40,798
Total	219,456

The above figures show but a little more than twice as many working with the hands as with the brain, while the asylum statistics show three and one-half times as many admissions of the former as of the latter class.

Sources of error in these figures must be very numerous. For instance, to include all those engaged in agriculture under manual workers, is fallacious. Similarly to take account of all in personal service as brain-workers, is misleading; but error on the one side would possibly offset the other. It is manifestly impossible to say what proportion pertains to each of the two classes, but if the estimate of three-quarters is thought to be too high for the manual service, the fraction of seven-eighths may be used and the following figures would result: On the one hand, 440,709; and on the other, 190,153; or, practically, two and one-half times as many of the former as of the latter.

ERROR No. XVI is the belief that insanity is increasing to an alarming extent. It is true that such statistics as we have would apparently justify the fear, but I, myself, am not at all convinced of the truth of this statement. That there is a relative increase in nervous disease is probable—this due to the absence of any legal restriction upon marriage, and the unchecked propagation of the defective classes. I am in-

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clined to the belief, however, that diseases which the alienist is called upon to treat, display in recent years a greater tendency to assume organic forms. From this tendency, which must operate to shorten life and diminish productivity, it is perhaps, safe to predict a diminution in the number of those nervous diseases in which heredity plays so important a part. According to the census of 1884 the proportion of insane in the state was as 1 to 701; of 1894 as 1 to 510; but the fact that in recent years insanity is brought more into view by the increased dependence upon hospital care and the further fact that foreign immigration adds tremendously to our insane population, should not be forgotten. Of 562 admissions to the Eastern Michigan asylum during the last biennial period, but 219 were native born, of native born parents. One hundred nineteen were native born of foreign born parents, and the large number of 224 were foreign born, a number greater than native born of American parents, and representing forty per cent. of the total admissions.

Is ERROR No. XVII the failure to inveigh constantly against the further corruption of American civilization by permitting such unwelcome additions to our political household?

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ANNUAL ADDRESS ON SURGERY.

THE POETICAL IN SURGERY.

SCHUYLER C. GRAVES, M. D.,
Grand Rapids, Mich.

Mr. President, Ladies and Gentlemen :

It has been the purpose of your orator to incorporate, in this address, three prominent characteristics, viz.:

1. Avoidance, as far as possible, of technicality.
2. Brevity.
3. Freshness or novelty.

Just how far he has succeeded in his effort he leaves his listeners to determine.

An address of this nature must needs be largely literary in its composition, because of the general or mixed character of the audience to which it is dedicated. Hence the necessity for the elimination, more or less, of the technical.

It is a fact also, beyond peradventure, that sustained efforts, in the matter of public addresses, are, with but few exceptions, notoriously tedious, and, therefore, far better is it for both addressor and addressed that the latter should feel rather underfed than to be filled *ad nauseam.*

As to title, novelty will certainly be granted, because the laity, and for that matter, many medical men and women as well, have never thought of any possible connection between the "ars poetica" and the "ars chirurgica."

Thoughts respecting this subject have, for some time past, been crystallizing in the writer's mind, and that such connection does obtain it will be his pleasant duty, this evening, to endeavor to render apparent.

"Life is a shrub, and poetry, its blossom."

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Poetry, however, is not mere versification; not simple, wordy tintinnabulation. Poetry is "the art of interpreting ideas by the faculty of imagination." It is "the art of idealizing in thought and in expression;" that is, the art by which the perfect is aimed at or attained. Poetry, then, is an art, and art, as exhibited in the expression of thought or action, stamps upon such expression the impress of the poetical.

A poet is the artist, and conversely, the artist is a poet. Hence the justification of my theme—that the surgeon, as an artist, is a poet, and his art poetic.

Poetry is very inclusive. We see it everywhere. What is the art of music, but the poetry of sound; the arts of sculpture and architecture, but the poetry of figure and of form; the art of painting, but the poetry of color; the art of dancing, but the poetry of motion.

Poetry is universal in its distribution and multiform in its expression.

As many rivulets flow from a common, elevated centre, in different directions, to enter into varying relations, to grow wider, or deeper, or noisier, or quieter, according to the physical conditions to which they are subjected; so poetry, starting from the same high source, appears differently as it flows through that complex combination of the physical and the intellectual known as the human mind. What emerges, therefore, from one as versification, may emerge from another as song-talent. It may appear at the finger-tips of the pianist, or the painter, or the sculptor or the surgeon. It may, for that matter, lie behind the arm that shoves a plane, or in the brawny biceps of a blacksmith, for work perfectly done is a true expression of art, and art is poetry.

Art has no concern, whatever, with the means or the end of an action. The burglar can be an artist; the hangman or the beheader, likewise.

It is the method and the quality, the how, rather than the means or the end, certainly not the quanity, of an action which breathe the true spirit.

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The meadow lark, as it rises from the dewy, sun-kissed fields of morn, fairly fills the air with mellow poesy.

The mere possession of vocal chords, the means, and the simple stimulus to utterance, in the unconscious praise of the Creator, the end, have but little to do with the quality, with the poetic expression, of the strain.

The peacock or the guinea hen have vocal chords, and, also, have as much right, as they surely have the inclination, to praise God as the lark or the nightingale, and, yet, the notes which *they* inflict upon an unoffending world are very far from poetic.

By digression, I must, in frankness, admit that there exist even surgeons of the peacock type. They make much noise; they exhibit an ample spread of gaudy tail; but their notes are harsh and inharmonious. On the other hand, it has been my pleasure, more times than once, to recognize the nightingales of our art, the surgical Longfellows, Rembrandts, Michael Angelos and Schumanns. They deserve rank with these masters, for they are masters, themselves; quieter, less conspicuous, but masters, nevertheless, pouring out their melody of action in streams of living song.

And, now, more particularly to surgery.

Science is knowledge, nothing more and nothing less. Art is the application of knowledge. Art is the ability to make manual application of the principles perceived by science. For instance, the knowledge that drainage is one of the greatest of the underlying surgical principles, is science. The application of this principle to any individual case, that is, the securing of the conditions necessary for its operation, is art, and the better this is done the more artistic, the action.

Surgery, then, is a science and an art. As a science, however, surgery is purely professional; but as an art it passes beyond the professional and into the poetical.

It is said that there are three stages in the development of architecture.

1. The stage of simple protection from the elements.

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2. The stage of solidity.
3. The stage of ornamentation.

The stage of ornamentation in architecture exhibits structures which not only protect from the elements; which not only present the qualities of endurance; but which are veritable poems in granite and steel, in marble and terra-cotta, in onyx and alabaster.

Corresponding to these three stages of architectural development are the following stages in the evolution of surgery:

1. The stage of empiricism.
2. The stage of technically scientific acquirement.
3. The stage of artistic perception.

And as the stage of ornamentation in architecture includes the others, so does that of artistic perception, the stages of empiricism and technically scientific acquirement in surgery.

A truly artistic surgeon will surely be a devotee at the altar of science, as well as a worshiper at the shrine of the aesthetic.

Inasmuch as poetry is an expression of the good, the true and the beautiful, surgery, if poetic, must, also, be a reflection of the same attributes. Let us see.

Surgery is *good* because it relieves suffering and saves life. Surgery is *true* because it falters never in the steadfastness of its purpose. Surgery is *beautiful* because it exhibits results which are pleasing to the eye, and to mind and heart, as well.

To many people, thoughts of surgery are associated with such matters as pain, and blood, and pus, and tumors, and deformities, over which the bird of poesy's paradise does not seem to spread her irised wings; but these things do not constitute the sum total of surgery, and in the contemplation of our theme we must remember that such matters are, oft-times, but the means to an end; oft-times the very stimuli to poetic effort. They are but the marble-dust and clay on the floor of the sculptor's workshop; the daubings of color on the palette of the painter.

The true artist can, frequently, see beauty beyond the vale of the unpleasant and the disagreeable.

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How often have we noticed strands of cob-web, stretching from flower to flower, in the sunshine of a bright, spring morning; but there is no loss, thereby, of flowery fragrance or bloom. All objects in nature cannot bear the color and scent of the eglantine, and even the eglantine has thorns.

Who can look intelligently upon the structure of the human form divine and not see poetry there?

It is fairly crowded with things poetical.

The vascular arabesque work; the "fountains filled with blood;" the placques and corpuscles which spin so merrily along the crimson highways, and play at "hide and seek" in the nooks and crannies of the capillaries; the glistening, gliding joints which, like well-oiled machinery, perform their function so noiselessly in the furtherance of normal activities; the plump muscles, composed of millions upon millions of little pink soldiers, all pulling and tugging so cheerfully, doing their part in the animal economy; the heroic tissue-cells, dying that others may live, that the individual may grow; the pulmonary corridors, satin-lined, where the breezes mingle and rustle and whisper together; the mysterious walks in the misty mazes of the brain.

And so it is with surgery. If we find poetry in the alphabet of surgery, which is anatomy, we must surely find it in the rounded sentences and finished periods of the oration, which is surgery itself.

The wandering of serpiginous ulcers, like mariners on an unknown sea; the racing of cancer-cells to see which will be the first to reach the nearest lymph-gland; the lifting of that curtain, dropped by disease or injury before the open pupil, which is daily done by the ophthalmic surgeon in his operation for the removal of cataract; an artistic manner of holding the knife; the correct attitude and movement of the arm and the body in the wielding of the same; the making of an incision which is proper in its length, which is proper in its location, and which is proper in its direction; the securing of the right relations which should obtain between the tegumen-

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tary incision and the incision of the deeper tissues; the skillful avoidance of important vascular and nerve trunks; the double ligation of suitably-sized vessels prior to division; the deft control of accidental hæmorrhage; the rapid, dexterous use of the needle and thread; the exhibition of proper action in moments of trying emergencies; the apt execution of scientifically strategic movements, when and where necessary; the handling of operative wounds in such a manner as to have healing result without a drop of pus or a change of dressing; in fact, when anything, connected with operative or non-operative surgery, is done which marks the artist, it will, at the same time, manifest a style of true poetic composition.

And now, my friends, in conclusion, and by way of making an offering in honor of a class of men who, together with their brother physicians, have done more, in this world, for the cause of humanity than any other class of beings; who, in the performance of their duty, have fearlessly penetrated into the gloom of the valley of death, breathing its pestilential vapors, and who, more often than once, in so doing, have been pierced to the heart by the gleaming lances of their aggressive enemies; I repeat, by way of paying a tribute of respect to such men, let us turn our attention, finally and most briefly, from the poetry of surgery to the poets of surgery; from the art to the artists.

Methinks that these poets, the surgeons, who come into such intimate touch with the woe and misery and wretchedness of life, in whose breasts can be found the glowing gem of benevolence, the iridescent crystal of philanthropy, and whose efforts, untainted by the love of lucre and uninfluenced, as before stated, by the sense of personal danger, are a constant endeavor to assuage such woes, to lift the drooping form, to cheer the weary spirit, to wipe the tears away; in short, to lead order out of chaos and to bring poetic peace and rhythmic, rippling melody into the lives of men, surely merit the divine encomium: "Inasmuch as ye have done it unto the least of these, my brethren, ye have done it unto me."

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ANNUAL ADDRESS ON GYNECOLOGY.

THE SPHERE OF THE GENERAL PRACTITIONER IN GYNECOLOGICAL CASES.

W. H. YOUNG,
Nashville, Mich.

Mr. President, Ladies and Gentlemen :

Upon accepting the position of Orator to the Section of Obstetrics and Gynecology, I did not at that time realize the difficulties which were in store for me. When, however, I began to apply myself to the selection of a subject to present to this society, I began to fully comprehend the difficulties to be encountered. It is at all times a difficult task to present old facts in a new garb, so as to make them either interesting or instructive; and when I consider that the audience I now address is probably, each and all, more conversant with the various subjects suitable for presenting to this Section than I, the task which I have assumed attains, to me at least, the most gigantic proportions.

For the time being, however, I wish to appear before you in the role of the general practitioner, as one whose time is not taken up entirely in gynecological or other special line of practice, but is devoted more, or less, to the practice of medicine in all of its departments, as the cases may occur in a general practice. In this position I find myself in the company of the major part of the members of the medical profession and of this society.

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Compared with the whole number there are few persons so located, and who have attained sufficient prestige in the profession, to enable them to devote their entire time and talents to the practice of obstetrics and gynecology, the great majority of the profession being compelled, through force of circumstances, to give their attention to general practice. Although such is the case, all must admit that the field of knowledge in the domain of medicine has now become too extensive, and life to short, to be grasped in all of its details by any one individual, and hence the necessity for the division into the various specialties as they now exist.

But while admitting the necessity for specialism in medical practice, we can see some grounds for fearing that some have been allured into special lines of practice, especially that of gynecology, perhaps fascinated by the brilliant results obtained by some of the great masters whose names embellish the roll of gynecologists, who have not had the necessary training previous to selecting this as their special line of practice.

I hold that no person can be thoroughly equipped as a specialist in gynecology whose mind has not been expanded by a general practice sufficient to enable him to grasp the human system as a whole, and not merely a part of it. Without such training the specialist is liable to see and to interpret things in the dim light of his own limited sphere, and to forget that the human body consists of and contains more organs, and performs more functions, than is dreamed of in his philosophy.

To be a successful specialist, be that ophthalmic, gynecic, or whatever else it may be, requires that the mind and modes of reasoning be so fully developed that he may not be blinded to the fact that all headaches are not caused by errors of refraction, to be cured by the proper adjustment of lenses, or that all pain in the head and back of the female are not necessarily due to some organic or functional derangement of the generative organs.

It is only within a comparatively limited period that the

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subject of gynecology has attained to sufficient prominence to entitle it to the distinction of a specialty; yet within this limited period, it is with some degree of pride that gynecology can point to the importance of its achievements, and to the many illustrious names which are now and have been identified with it.

Diseases of the female generative organs are frequently met with in practice, and have received so much attention during the last few years at the hands of the gynecologist, that there would appear to be some danger that some of the other morbid conditions of the female may be overlooked in an attempt to trace almost all her physical and mental derangments to some abnormality of her pelvic organs, as though the uterus, tubes, and ovaries were the sole constituent parts of the woman.

The grand achievements which have brought abdominal surgery into prominence, and have given an impetus to surgery in general, have in them a certain amount of fascination which tempts the ambition of the physician, pointing him to fortune and to fame by entering into this tempting field of practice.

Owing to the conditions attending our civilization and social habits, the diseases incident to the female form a not very inconsiderable factor in the practice of the general practitioner, and to him it is a pertinent question, which of these cases, or what class of cases is it his legitimate province to treat, and which shall he turn over into the hands of the specialist for treatment.

In formulating an answer to this question, the conditions which surround the case must be taken into consideration.

In cities and the larger towns, where the specialist is within easy reach, and may be summoned upon a moments notice, or where in case of an emergency the patient may be at once transferred to a well equipped hospital, and there placed in the hands of the well trained and expert specialist, with his corps of assistants and trained nurses, there can be no grounds

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for doubting that many cases which are treated at home by the general practitioner could not only with benefit to the patient, but with more credit to the physician, be so disposed of.

These conditions, however, do not always obtain. Trained specialists in obstetrics and gynecology are comparatively few in number, and are necessarily located principally in the cities and larger towns, frequently having some connection with hospitals and other public institutions where there is an abundant scope for the exercise of their superior skill in their chosen specialty. On the contrary, in country practice and places distant from these centres of population, in emergency cases such assistance is not to be obtained, but the attending physician may find himself alone, unaided, in the presence of some threatening difficulty requiring immediate action. In such cases and under such circumstances the disposal of the patient ceases to be one of choice, and becomes one of necessity, and it becomes the duty of the physician to render such assistance as may be within his power. The physician should therefore be prepared and ready to do anything and everything within the entire range of subjects embraced in his profession, should occasion require it. In such cases, however, as require treatment endangering life, he should weigh the chances for his patient under an expectant plan of treatment, and carefully balance that against the prospects with, perhaps, some difficult and important operation or procedure, undertaken by one unaccustomed to its performance, and perhaps surrounded by very unpropitious environments.

If, after carefully weighing the case in its every aspect, he is satisfied that he can interfere with benefit to his patient, it is his duty to undertake any, and everything, however hazardous In so doing, the physician should be governed by his own convictions of right, which may prove to be his only solace in case of an unfavorable termination.

It is difficult for people in general to believe that operations performed by their own home physicians, and ending dis-

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astrously to the patient, have received just and proper treatment, and I am sorry to say that these sentiments are too often encouraged by some rival in business.

It requires fortitude to face the dangers of an operation and public sentiment at the same time, and, to do so, the action should be based on the strongest convictions of necessity and right.

In some emergency cases it may not be so much a question whether or not the patient might have been more safely entrusted to other hands, as it may be one to decide between active interference, under unfavorable circumstances, and expectancy. Upon the answer to this question the fate of the patient may depend, and in many cases it takes a strong nerve, combined with moral courage, to make the decision.

During the past few years, the surgical aspect of gynecology has been in the ascendency, and occasionally gynecologists have been accused of too frequent a resort to the knife, to the neglect of other and milder measures; and it has even been hinted that many unnecessary mutilations have been and are being made. I have too much confidence in the medical profession of to-day to harbor this idea for a moment, or to believe that any surgeon is making, or has made, any unnecessary operation, believing it to be such, from mercenary or other impure motive. "To err is human," and it is not at all impossible that errors of judgment may have occurred, and that through such error unnecessary operations may have been made, which some other less heroic measures might have rendered unnecessary; but if there have been any such cases, they should be attributed to errors of the head and not of the heart. Occasionally we all see cases in which we are in doubt as to the proper course for us to pursue, and after having used our best judgment, when we reach the end, we may wish that we had taken the other road.

As a rule, to which there are some exceptions, the cases which finally fall into the hands of the specialist in gynecology have already passed through the hands of one or more

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general practitioners; if, therefore, needless operations are being made, I would ask the question, to whom does the responsibility for these needless operations belong.

The importance of an early diagnosis in female pelvic disease can scarcely be overestimated, and as the majority of the cases first fall into the hands of the general practitioner, it is to him we must look for this early diagnosis, and we believe that many of the cases which, at a later date, after the health has become impaired, and after perhaps many years of suffering, fall into the hands of the specialist, requiring operations, might have been spared the surgeons knife by prompt and efficient treatment, instituted during the incipient stage of the disease.

If all of the lacerations of the perineum and cervix which occur during childbirth—and here let me say, that such lacerations are frequent and in many cases unavoidable—if all such lacerations, I say, were promptly repaired at the time of the accident, and strict asepsis observed during the puerperium, many cases would be spared years of invalidism, and, in the majority of cases, would escape the necessity for recourse to the specialist at a later date.

All cases of laceration do not produce untoward symptoms, many of them healing spontaneously, giving the patient no further trouble. But as we have no certain means of knowing which of these cases will so terminate, and which adversely to the patient, it is the duty of the physician to give each and every patient the benefit of the doubt, and to immediately repair the lesion.

A very considerable proportion of the cases which seek relief from the physician are suffering from some form of pelvic inflammation, prominent among which is endometritis. The remote causes inducing this condition are numerous and varied, while the immediate cause may be said to be one or other of the following, traumatism, sepsis, or specific infection.

These several etiological factors are aided in the produc-

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tion of endometritis by all of those conditions which tend to impair the resistance of the tissues to the invasion of pathogenic microbes.

Traumatism is in itself an exciting cause only in so far as it opens up a new and easy channel for the introduction of septic matter.

If it is true, as taught by Senn and other recent writers, that all inflammatory processes are due to microbes, then our understanding of the etiology of endometritis becomes more simplified, and endometritis may be defined to be the result of microbic invasion, the uterus having been made more vulnerable by traumatism and those conditions which tend to lower the resisting power of the same.

Leaving out of view those cases due to specific causes, the most prolific source of endometritis may be said to be traumatism during manual or instrumental delivery, either at term or during abortions.

While it is not claimed that traumatism can be prevented in all cases, under the conditions named, it is claimed that by the strict observance of the rules which govern aseptic operations, and by the use of antiseptics, when necessary, the danger from the introduction of these morbific germs can frequently, and I might say generally, be prevented. In neglected cases, after the disease has spread from the uterus and has invaded the tubes and ovaries, conservative treatment may be of no avail, and it is to surgery we must look as our only resource.

Another very frequent source of invalidism is the various forms of displacement of the uterus. The frequency of this difficulty is variously stated. Madden places it at one-tenth of all his cases. A malposition of the uterus is not necessarily in itself a very serious matter, and may be present without producing any symptoms of its presence. The condition which was instrumental in producing the displacement may be a more serious difficulty than the displacement itself, and it would be useless in these cases to resort to the applica-

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tion of artificial supports within the vagina, or to attempt to restore it to its normal position, by Alexander's operation, abdominal fixation, or other method, until the condition which has caused the displacement is relieved. Among the most frequent causes of displacements of the uterus getting up too soon after labor or abortion holds a very prominent place. The idea is quite prevalent among women that they should be up on the ninth day after labor. Why this particular day should be selected in preference to any other day I do not know. In poorly nourished women and those of lax fiber involution is accomplished very slowly, and such women may be less able to be up at the end of two weeks or more than others in better condition may be in almost as many days. In almost if not all cases of downward and backward displacement the uterus is large and heavy, in a condition of subinvolution. If more attention was given to the physical condition after labor and abortion before women were permitted to be up, and to resume their usual duties, many of the serious results of these conditions might be avoided.

In a large majority of the cases which we have been considering the patient is in the hands of the general practitioner, and it is to him we must look for the necessary care and treatment which in many cases would prevent the necessity for a resort to more heroic measures at a later date.

There is another class of cases, however, which can neither be prevented nor alleviated by any means known to us at the present time, such as tumors, both benign and malignant.

These cases, like the others, frequently first fall under the observation of the general practitioner. Here an early recognition of the morbid condition may be of much importance to the patient, and the general practitioner has a very important and responsible duty to perform in calling the attention of his patient to her true condition before serious complications have set in, which may unfavorably affect the prog-

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nosis—when they shall finally fall into the hands of the specialist.

The work of those engaged in special lines of practice is thus, in some measure at least, dependant upon the general practitioner, and the relations existing between them should therefore be of the most cordial and friendly character.

That such relationship between them should exist is absolutely necessary, that the general practitioner should have confidence, not only in regard to the superior skill and ability of the specialist in his particular line of practice, but also in his integrity as a man, believing that he will receive fair and courteous treatment at his hands, which will not tend to impair the confidence which his patient has hitherto reposed in him.

When such relationship does exist, the specialist and general practitioner can work together with mutual advantage to themselves, and with benefit to their patients.

While it is altogether too Utopian to believe that the time may ever come in the history of our race when disease will become a thing of the past, or when the surgeon's knife will become obsolete, it is nevertheless an undeniable fact that many of the conditions from which women are now suffering are preventable, with the knowledge which we now possess if put into practice, and it is to the general practitioner we must look for these results.

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SECTION ON SURGERY.

OFFICERS.

ERNEST T. TAPPEY, Detroit, Chairman.
ANGUS MCLEAN, Detroit, Secretary.

SECRETARY'S MINUTES.

FIRST DAY, THURSDAY, JUNE 6th.

2 O'CLOCK, P. M.

The subject for consideration was :

GENITO-URINARY SURGERY.

The following papers were read and discussed :

I. Treatment of Urethral Stricture, E. T. Tappey, Detroit.

II. The Cystoscope and Its Limitations as a Diagnostic Aid, F. W. Robbins, Detroit.

III. Methods of Relief in Prostatic Obstruction, Wm. N. Wishard, Indianapolis, Ind.

A general discussion of these papers followed, and the section then adjourned to 8:30 A. M. the following day.

SECOND DAY, FRIDAY, JUNE 7th.

MORNING SESSION, 8:30 A. M.

The following papers were read and discussed :

I. Shock, W. S. Connery, Saginaw.

II. Cataract; Simple Extraction; Report of One Hundred Cases, Eugene Smith, Detroit.

III. Selected Cases of Railway Surgery, F. B. Tibbals, Detroit.

AFTERNOON SESSION—2 P. M.

The election of Section Officers for the ensuing year resulted as follows :

D. Milton Greene, Grand Rapids, Chairman.
Albert E. Bulson, Jackson, Secretary.
C. H. Baker, Bay City, Orator.

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The following papers were read and discussed :

I. Some Reflexes with Cases to Illustrate, J. A. Porter, Brooklyn.

II. Deafness; What Are We Doing to Prevent It? W. F. Strangways, Flint.

III. Extraction of Biliary Calculus from the Common Duct, Theo. A. McGraw, Detroit.

IV. Reports of Interesting Cases, D. Milton Greene, Grand Rapids.

V. Some Features of Strabismus, Leartus Connor, Detroit.

VI. Neuro-Retinitis, with Special Reference to the Monocular Variety, A. E. Bulson, Jackson.

The following papers were read by title :

VII. An Analysis of Twenty-five Cases of Appendicitis, Schuyler C. Graves, Grand Rapids,

VIII. Pathological Lesions of the Inferior Maxillary Bone, with Report of a Case, E. B. Smith, Detroit.

IX. An Unusual Fatal Aural Case, Luke E. Schell and Don M. Campbell, Detroit.

Adjourned.

ALBERT E. BULSON,
Secretary, *pro tem.*

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TREATMENT OF URETHRAL STRICTURE.

ERNEST T. TAPPEY, M. D.,
Detroit, Mich.

Mr. Chairman and Members of the Surgical Section :

Most urethral strictures are of such character that they can be efficiently treated by dilatation, that is, they are moderate in size and made of fibrinous tissue of such consistence that the strictured portion of the canal can be stretched and the fibrinous exudate can be stimulated to absorption.

A so-called resilient stricture is easily dilated, but the surrounding fibrinous tissue closes in on the opening almost immediately, and the patient experiences relief only for a few days or perhaps only a few hours. Such strictures there is no use in dilating. There is another class of strictures formed of fibrinous tissue of such quantity and consistence that they cannot be dilated—they may be torn but not dilated. These strictures, then, cannot be treated by this method. Dilatation gives relief not simply by stretching the contracted canal, but at the same time causing, by the pressure used, absorption of the inflammatory mass—in part. This can best be accomplished by the use of a metallic sound sufficiently large to cause moderate pressure and not large enough to wound the mucous membrane. A sound is to be used first which enters the strictured urethra without any considerable effort on the part of the surgeon; it may be a filiform bougie; then one a trifle larger, and so on till the size of the normal urethra is attained.

In some cases the steel sound may be used from the commencement of the treatment; in other cases the stricture is either so narrow that it would be dangerous to use a steel

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sound small enough to penetrate it, or there is so much sensitiveness that a steel sound cannot be borne. The sound causes too much pain at the time of use, and its use is followed by a great deal of pain lasting for several days, and in some cases by a urethritis. In such cases we do better to commence by the use of the soft bougie, following with the steel sound afterwards, when the sensitive condition of the urethra has subsided. I have had very much less trouble from the use of the sound since I adopted the plan of washing the glans penis thoroughly and injecting a 1–20,000 solution of corrosive sublimate into the urethra. This precaution is far more effectual in preventing a chill than the old treatment of administering a 10 grain dose of quinine. I must say, however, that I approve of the administration of quinine, or preferably salol, by the mouth for several days before and after any operation upon the urethra. The urine is in this way rendered more or less aseptic, and we are less likely to have inflammatory troubles after operation—my practice is to give 10 grs. of salol three times a day. There is sometimes a severe hemorrhage following the use of a sound. This may take place from the irritated surface at the site of the stricture or just posterior to it, but in many cases it is caused by tearing a small meatus, and, in the latter class of cases, can be avoided only by enlarging the meatus. This operation of meatotomy is, by the way, a very necessary part of efficient dilatation in many cases, for the meatus proves to be smaller than the strictured portion of the urethra, and consequently a sound cannot be used sufficiently large to dilate the latter. This little operation can of course be done with cocaine anæsthesia, and without a specially devised instrument. Why any one should ever have thought it necessary to invent a meatome, I have never been able to understand. I use any small bladed knife. Generally I select a tenotome, and after the part has been anæsthetized by cocaine—10 per cent. sol.—introduce the blade into the urethra and cut the meatus as I withdraw it.

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There are other strictures which cannot be treated successfully by dilatation. These are impermeable strictures, strictures formed of a mass of unyielding cicatricial tissue, and resilient strictures, those which are dilatable, but which like rubber contract at once or very soon. These strictures can be successfully treated only by external urethrotomy. Internal urethrotomy cannot take its place, for, as a matter of fact, the results of internal urethrotomy do not compare with those of the external operation, the reason seeming to be that the indurated tissue about the stricture cannot be completely divided, as it may be in the external operation. The external operation, as devised by Syme, does not seem to contemplate strictures in the perineal portion only. I have read his treatise carefully, and I conclude that he had the operation in mind for the treatment of all strictures, wherever located, that require division. Indeed! I find that in case No. XIII, he distinctly says "I divided the stricture, which was anterior but close to the scrotum, by external means upon a grooved director." I speak of this because I think the operation is generally believed to be performed upon the perineal portion alone, the impression being common that internal urethrotomy is proper for strictures of the pendulous portion. A stricture is a narrowed portion of the urethra, caused by an inflammatory thickening of the mucous membrane and a deposit of inflammatory fibrinous material in the cellular tissue surrounding it. Internal urethrotomy divides this only imperfectly, while by the external operation the division can be accomplished thoroughly, as well as judiciously. If the fibrinous exudate be not thoroughly divided, the symptoms of stricture do not remain absent very long, even though a large sound can be passed at the time. This being due to the well known contractibility of this exudative tissue. If it happens to be not thoroughly divided at any one part, the contraction goes steadily on and the symptoms of stricture soon reaffirm themselves. I notice, moreover, that there is some misapprehension as to the direction the cut is to be made

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after the point of the knife has penetrated the external tissues and is lodged in the groove of the staff. Treves, describing the operation, says: "An incision is made precisely in the median line of the perineum and the knife is so directed that its point shall hit the shoulder of the instrument. The surgeon must convince himself that this portion of the staff is laid bare. He then engages the point of the knife in the groove of the staff, and keeping most carefully in the groove, thrusts the knife towards the neck of the bladder, until he has divided the whole of the stricture," etc., implying that the operation is always done in the perineal portion of the urethra, and directing that the knife be pushed towards the neck of the bladder. While Syme distinctly says: "The best knife for dividing the stricture is a short bistoury, with straight back and slightly convex belly. It should be inserted in the groove of the director, nearly an inch beyond the thick part, and pushed forward to the notch, when both instruments, being held firmly by the operator, are carried in an outward direction so as to divide the stricture completely, which may be felt by the giving way of a firm texture, and is proved by the thick part of the instrument no longer meeting with resistance. I at first supposed that division of its contracting ring at its narrowest part was sufficient for the purpose, but have long been satisfied that so limited an incision exposes the patient to relapse, since there is generally, for some extent on both sides, a narrow or conical shaped portion of the canal, capable of reproducing the symptoms of the disease." Morrow, in his system of genito-urinary diseases, adopts the description just quoted of Treves. He also says: "The opening of the urethra in its penile portion is, as a formal operative procedure, practically unknown." This is undoubtedly true at the present time. But I wish to call attention to the fact that so illustrious a surgeon as Syme contemplated the external opening of the urethra at any point of its extent, and to submit to this association that it may be wiser to adopt this feature of his operation.

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THE CYSTOSCOPE AND ITS LIMITATIONS AS A DIAGNOSTIC AID.

FREDERICK W. ROBBINS, A. M., M. D.,
Detroit, Mich.

In these times when every effort is being expended in perfecting methods of diagnosis as well as the technique of operations, the genito-urinary organs have not been neglected; and in the diagnosis of diseases peculiar to them, ocular demonstration has more than ever before become the hand-maiden of palpative and chemical research.

In the female subject the inspection of the bladder has been made very easy by means of the simple endoscope of Doctor Howard Kelly. Through the endoscope, the inspection of the mouths of the ureters and cauterization of the same, as well as the pelvis of the kidneys, as Kelly does it, does not seem difficult. As yet no such simple device has been produced for the inspection of the male bladder, but we find in the cystoscope a very satisfactory instrument for use in many doubtful cases of bladder or kidney disease. The cystoscopes at present in use are the Nitze, made in Berlin, and the Leiter, made in Vienna. Modifications of these instruments have been placed on the market, but all are probably inferior to the two mentioned ; and these two are in principle if not in fact the same, for they were worked out by Professor Nitze in conjunction with the instrument maker Leiter. This instrument which I use was made by Leiter, and differs from the Nitze mainly in construction of the tip, which as you see contains the light surrounded by a metallic shield. The lamp is easily replaced when burned out. In the Nitze

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cystoscope the glass with contained lamp is at the extreme end of the instrument, and, with no metallic shield, is in all parts surrounded by the fluid of the bladder. Many cystoscopists, among them the authority on cystoscopy of this country, Doctor Willy Meyer, of New York, use the Nitze instrument, chiefly on account of several secondary cystoscopes devised by Nitze which in some cases are of advantage. The cystoscope, like the telescope, was a crude instrument at first, but has been improved from time to time until its present state of perfection was reached about five years ago. In the tip beneath the crystal window is the electric lamp, and near the junction of the tip with the shaft is placed a prism which sends the rays of light, diminishing the size of the inverted picture, down the shaft to the eye. There is within the tube passing to the prism an optical combination of lenzes called the telescope attachment, which gives us a clear, correct, and slightly diminished picture of the object looked upon. In the Nitze instrument the object is slightly magnified. At the ocular end of the instrument the electric connections are made and so arranged that the light can readily be turned off or on and the position of the prism in the bladder easily noted. The size of the shaft is No. 22 F. At times it is an advantage to possess the irrigating cystoscope, which is this instrument with two tubes through which water can be forced into and drawn from the bladder. The inlet tube has its opening just back of the prism so that its surface can be irrigated by the clear water as it is forced in. There have been devised a number of instruments by which attempts were made to catheterize the ureters, but all have been failures. Doctor Meyer wrote me that there had been no improvements of note within the last three years, but yesterday an extensive article came to our notice in the Berliner Klinische Wochenschrift of April 29th, 1895, by Doctor Max Nitze in which the Doctor gives to the profession an instrument very ingenious, and which we hope will prove as practical in the hands of others as it seems to have done in the hands of its author.

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In the female I can see no place for the electric cystoscope of any variety since the simple instruments of Professors Pawlik and Kelly have been given to the profession.

In the use of the cystocope it is essential to have the right sort of battery. The platinum must be brought to a white heat gradually, and not too much heat produced, else the lamp will be immediately burned out; and when the proper amount of light is produced there must be no increase or decrease in its illuminating power. I mention this because I found great annoyance in my first attempts at cystoscopy from these causes; but since supplying myself, at the suggestion of Doctor Meyer, with the battery made by the New York Galvano Electric Co. there has been no further trouble.

I do not propose taking the valuable time of this Section in reporting cases, but will emphasize some of the classes of cases in which cystoscopy is an advantage or necessity. First, however, we must keep in mind three conditions that must be present if cystoscopy is to be done with any satisfaction: The urethra must readily allow the entrance of a No. 22 F instrument; the bladder must have a capacity of about five fluid ounces. This is in accord with the results of the experiments of Nitze which showed that this amount of fluid is necessary to distend the bladder sufficiently to overcome the folds of the mucous membrane of the normally contracted bladder; and also, as Doctor Meyer suggests, one's judgment is apt to be much nearer perfect when observations are made under similar conditions. Therefore in a bladder so contracted that the capacity is only an ounce or two there is not much to be gained from cystoscopy; and moreover in such a small space there is some danger of burning the mucous membrane; and finally, it must be possible to keep the fluid nearly clear for some little time. Profuse hæmaturia, for example, always necessitates waiting until the hæmorrhage has for the time ceased before continuing the exploration.

Often the cystoscope may be used with little or no pain,

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but it is frequently necessary to inject into the bladder and posterior urethra from one to three drachms of a six per cent. solution of cocaine.

Enlargements of the prostate are readily observed through the cystoscope, and it might make considerable difference in our judgment regarding operations whether we see a protruding middle lobe with small pedicle causing much distress, or diffuse lateral hypertrophies where the results of operation have not as yet proved so satisfactory.

To one unaccustomed to the use of the cystoscope, it is easy to mistake a little fold of mucous membrane falling over the entrance to the urethra for a tumor, but further experience will remove all doubt in that respect. After entering well the bladder, it is desirable to make the examination systematically in order not to overlook anything, and this is done by carrying the beak directly to the fundus and drawing the instrument forward until the urethra shuts off the light from the prism. The superior segment of about 60° has been observed, and by repeating the procedure, turning the instrument to the right about 60° then 120°, and finally 180°, and so to the left, the entire bladder will have been explored. If nothing attracts the eye other than a pinkish gray surface, the mucous membrane may be considered normal, and our attention may be turned to the ureters, which, as is well known, are seen at the right and left angle of the trigonum, the urethra marking the third angle.

When cystitis of a mild grade is present, one may observe the congested vessels, not unlike the conditions observed on a congested retina through the opthalmoscope, but in the more severe forms of ulcerative or tubercular inflammation of the mucous membrane, the cystoscope picture will be that of a dirty gray surface with tags of pus hanging from its surface or floating in the water with which the bladder is filled.

If there has been an obstruction to the flow of urine for some time as the result of a stricture, for example, concentric hypertrophy of the bladder will have taken place, and the

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thickened bundles of muscular fibres can be seen projecting through the mucous membrane, giving a basket-like appearance to the entire surface. Then again the similar condition termed the sacculated bladder may exist, where one or more compartments are thrown into shadow; and into these pockets we can thrust the lamp in search of foreign bodies which are apt to exist and are easily overlooked in this condition.

A dark spot on the surface of the bladder may on careful observation be seen to be a ragged ulcer, possibly covered with phosphated deposit, or a growth, tuberculous or malignant. If an ulcer is believed to be present, the injection of a solution of iodide of potassium into the bladder will prove whether there be exfoliation of epithelium, because, if that be the case, in the course of fifteen or twenty minutes the characteristic reaction of iodine can be obtained from the saliva with the starch test. Foreign bodies, as pins, catheters, ligature knots, have been observed by the cystoscope.

It is often objected that the cystoscope is comparatively useless because, in most cases where cytoscopy would be performed for bladder disease, an exploratory incision would have the advantage of allowing a complete operation at once, if necessary, and at least beneficial on account of the perfect drainage of the bladder.

It must be borne in mind that we use the cystoscope for diagnostic purposes and not as an operative procedure. This instrument will be allowed when the patient will not submit to an exploratory operation, and as a result of the examination it is often made clear whether an operation should be made above the pubis, through the perineum, or not at all.

I would not for a moment desire to be understood as wishing to substitute the cystoscope for other means of diagnosis; but, as Doctor Meyer says, after all has been elicited that can be concerning a case, they resort to the cystoscope for the final act in completing a diagnosis.

No one is so skilled that his judgment may not be often confirmed or changed by the addition of more light. I have

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known cases where small phosphatic stones have been thought before operation to be large calculi, and perineal section made, when the cytoscope would have without doubt demonstrated the size of the stones and probably their character, so that lithotrity and evacuation would have been all sufficient.

Much can often be added to our knowledge of a bladder trouble by cytoscopy; sometimes very little. In suppurative disease usually the bladder can be douched out carefully and good vision obtained, but if there is present a growth bleeding profusely at the slightest touch, or there is profuse hemorrhage from the ureters, vision is soon obstructed and the examination is unsatisfactory; but even in such cases good results may be obtained upon the second examination, after the patient has had complete rest and the bleeding has ceased. The irrigating cystoscope I have not used, but the experience of others have proven its value. In many subjects the study of the condition of the ureters is of prime importance. They pierce the serous and muscular coats, and pass obliquely for some distance beneath the mucous membrane before entering the bladder. Thus there is produced a sphincter ureter which prevents the urine from trickling into the bladder, but as often as the pressure in the pelvis of the kidney and ureter is sufficient the sphincter relaxes and urine enters the bladder in little jets. Under different conditions, of course, these jets would be thrown out more or less often, at intervals of from twenty to sixty seconds usually, but both ureters should discharge their contents at intervals nearly alike, and when Doctor Meyer in one case found the jets from one ureter every thirty seconds and from the opposite one every three minutes, he at once concluded that the secreting power of one kidney was much less than that of the other. Then, as to the jet of urine, its frequency should be noted, and also whether the jet is clear. In some cases of pyelitis worm-like masses have been seen passing out from the ureters.

As in urethritis the meatus is red and swollen, so a similar condition may be seen at the mouth of a ureter leading to an

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inflamed kidney. Pouting and prolapse of the uretor is not a very uncommon condition. The trigonum must be carefully examined for conditions secondary to that of the kidneys, for tubercular or other disease is apt to extend to contiguous parts. Evidences of severe disease of one kidney and of the corresponding ureter, while the other ureter and its surroundings appear healthy, would place the surgeon in a position to operate boldly.

In conclusion, let me say that cystoscopy has an important place in the diagnosis of all obscure bladder or kidney diseases; that by the use of cocaine it can be performed without pain; that on account of its simplicity it should always precede if not take the place of surgical exploration; and that if too much is not expected of it, when carefully performed, it will not proof disappointing.

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METHODS OF RELIEF IN PROSTATIC OBSTRUCTION.

WM. N. WISHARD, A. M., M. D.,
Indianapolis, Ind.

In the consideration of methods of relief in prostatic obstruction, I desire to briefly call attention to the operative procedures which have been given recognition as being of more or less value in the treatment of retention from prostatic obstruction. I will not, therefore, refer to the use of the catheter or other non-operative methods. Operative procedures may properly be classified as palliative and radical, the former contemplating drainage through artificial openings for a greater or less length of time, with a view of relieving the cystitis and reducing congestion attendant upon prostatic hypertrophy. It is sufficiently well recognized that supra-pubic and perineal incisions are the methods best calculated to give access to the bladder for drainage. It may be regarded as yet a mooted question as to which of these two methods of access offers the best drainage and is the easiest and safest of accomplishment. It is probably true, however, that the perineal opening is utilized more frequently than the supra-pubic where simple drainage is desired, and that it is somewhat safer, and, in some respects, easier of performance. On the other hand, a supra-pubic opening is generally considered to afford more perfect drainage, and, if properly made, is capable of utilization for an indefinite period with comparatively harmless results. Harrison's perineo-prostatic puncture, which is suggested for the double purpose of giving drainage and producing shrinkage of the hypertrophied gland, has its advantages,

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but is not so commonly utilized at present as it was before the more recent methods of radical operation came into vogue.

It is, in fact, both a palliative and a radical operation, but it does not accomplish drainage as perfectly as the direct perineal incision into the urethra, or the supra-pubic opening. The methods of making the latter, and of making what Hunter McGuire calls a supra-pubic coffee spout canal, and also the usual perineal opening for drainage, are quite well understood and only deserve passing notice. I desire to call attention to a method of supra-pubic drainage, which I have recently employed with very satisfactory results, and which is easily made, and requires much less time than the methods heretofore suggested. It consists simply in the use of a large trocar and canula, which should be introduced above the pubes when the bladder is well distended with water, and the insertion through the canula, after the removal of the trocar, of an ordinary soft rubber catheter. After the catheter has been passed into the bladder, the canula can be withdrawn, and the catheter left in position. Where it is desired to make a larger opening for the purpose of exploring the bladder with the finger, as well as to secure drainage, access to the bladder can quickly be obtained by utilizing a little groove on the outside of the canula, made by welding a couple of parallel wires the full length of the canula. These small wires can be welded on an ordinary canula, and constitute a groove directly along which a knife blade can be inserted into the bladder, and the wound enlarged to any desired size. A wound sufficiently large to admit the finger can be made in this way in a remarkable short time, and after digital exploration of the bladder the wound can be closed around the tube in the usual manner, if so desired. The incision along the groove should be made on the side next to the pubes, to avoid injuring the peritoneum after the bladder walls have collapsed by emptying the urine or injected fluid through the canula. The direction of the puncture should be obliquely upward at an angle of about forty-five degrees,

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owing to the amount of bladder distention existing. Where drainage alone is the object, and digital exploration of the bladder is not contemplated, an ordinary large trocar and canula will serve as a conductor for a drainage catheter. I was called to see a patient some two weeks ago who was suffering from retention of urine due to an enlarged prostate, and the prostatic congestion and consequent mechanical obstruction of the urethra was so great that it was impossible to introduce any kind of instrument; even a filiform bougie could not be introduced. The bladder was greatly distended with urine, and I made a supra-pubic puncture in the manner above described, and fastened a catheter in position, and left it four days, at the end of which time the prostatic congestion had greatly subsided, and an ordinary soft rubber catheter of large size passed easily into the bladder through the urethra, and the supra-pubic drain was removed. The length of time which any kind of drainage should be used is a matter of very great practical interest, and is to be determined largely by the conditions existing in the individual case under observation. It may be stated as a general rule that drainage should be maintained so long as urine contains pus and mucous, and has a uniform low specific gravity, and so long as there is undue bladder and urethral tenderness existing. In my own experience I have found the time to vary from three or four days to as many months, and it of course will sometimes be necessary to make the opening permanent. In obviating the annoying fistulous openings which sometimes remain after removing the drainage tube, I have found it of very great advantage to give the tract through which the catheter has been used a thorough curetting. It is desirable also to remove the cicatrical tissue at the external orifice of the canal, and, if the opening is large, stitches can be inserted and a dry absorbent dressing applied, and urine drawn by catheter for four or five days to keep the wound dry. At the end of this time the fistulous tract will usually have closed.

Unfortunately in many cases neither temporary nor pro-

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longed drainage will offer permanent relief, and radical methods become imperative. I desire, first, to briefly call attention to the method of radical removal of obstructing growths through a perineal opening. I have heretofore reported in a paper read before the American Association of Genito-Urinary Surgeons a new method of enucleating the lateral lobes through a median perineal incision. The method, in brief, consists of making a sufficiently large perineal opening to admit the finger, and then passing a straight slender bladed knife along side the finger, and dividing the urethral mucous membrane immediately over the nodular hypertrophies which are usually easily felt. The mucous membrane can be peeled back from the point of incision, and the gland removed by piecemeal. The index finger of the right hand is the only instrument necessary after the incision has been made through the urethral mucous membrane. The incision should be made in the middle of the right or left side of the prostatic urethra, or on both sides if it is desired to remove both lobes. Counter pressure can be secured by introducing the first two fingers of the left hand into the rectum, and making direct pressure upon the gland, while with the right index finger the nodular growths are peeled out. So far as I am aware, perineal openings into the urethra and bladder have heretofore been chiefly utilized for the removal of pedunculated middle lobes, and the division of prostatic collars and bars. Dittles operation does not contemplate opening the urethra or bladder. In some of my own cases I have found great reduction in the size of the tumor, as felt through the rectum, to follow the direct puncture of the lateral lobes with a small galvano-cautery point. Access to the desired point of insertion of the cautery is obtained by introducing a small sized cylindrical rectal speculum with an oblique opening, and through this light is reflected with an ordinary head mirror. The obstructing tissue can usually easily be felt by the finger, and in order to secure accuracy it is generally desirable to pass an ordinary straight tenaculum along the finger and hook it into the pro-

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truding tissue at the point the latter is felt, and then to pass the speculum into the wound over the tenaculum. The tenaculum thus secures the tissue, and it can easily be drawn into the mouth of the speculum and freely punctured with the cautery. In the cases where I have used this method, the small resultant slough has occasioned no trouble, and has usually come away in a few days with the fluid used for irrigating the bladder. The use of the cautery, in this manner, is necessarily limited to small salient growths about the vesical orifice, and, to a limited extent, to the reduction of enlargement of the lateral lobes. It may, of course, be applied in the removal of so-called middle lobes and in the division of prostatic bar and collar shaped growths. The "bars and collars" are, however, more easily and quickly divided with the knife, or ruptured with the finger by overstretching. Unfortunately the distance from the perineum to the vesical orifice is so greatly increased in many cases that it is impossible to reach the bladder through the perineal wound, and it is doubtless true, as McGill and others have shown, that in the majority of cases the obstruction which really retards the escape of urine is a distinctly intra-vesical growth. Hence it is that the supra-pubic rather than the perineal opening is more generally favored for overcoming the mechanical difficulty involved in prostatic obstruction. Growths that are distinctly intra-vesical are generally so easily removed through a supra-pubic opening with blunt scissors that it seems to me a word of warning should be uttered against removing more than may be necessary. For example, in a pear-shaped hypertrophy, where the urethral opening is located where the stem of the pear is found, it is by no means necessary to remove all the growth in order to secure a low level emptying point for the bladder. The removal of a U shaped piece from the anterior or posterior side of the pear-shaped growth is usually all that is necessary, and lessons the very great danger, which generally exists, of hemorrhage, shock, uraemia, etc. From a mechanical point of view, and to meet existing conditions,

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it is undoubtedly true that the combined supra-pubic and perineal operation, first suggested by Belfield, is oftentimes necessary. One week ago to-day Dr. Eugene Fuller, of New York, read a paper before the American Association of Genito-Urinary Surgeons at Niagara Falls, in which he suggested a new method of removing the lateral lobes through a supra-pubic opening. His method differed from McGill's in that he makes a small tranverse incision immediately behind the vesical orifice, and through this inserts the finger, and with counter pressure through the rectum passes the finger down on either side of the prostate in much the same way as I have described through a perineal wound. The advantages which he claims are a very small bladder wound, and perfect access to the lateral lobes and intravesical growths through one opening.

Unfortunately the mortality of all operative procedures on the postate is very great, and this fact has greatly intensified the interest now felt in the operation of castration suggested by Dr. J. Wm. White. Dr. White's operation is causing a great deal of discussion at the present time, and it is yet impossible to determine its exact limitations. Undoubtedly it is applicable to many cases where the major factor in obstruction is a congestive one. Dr. White himself has deprecated the indiscriminate performance of the operation, but how much atrophy of hypertrophied or normal prostatic tissue it will produce is not yet settled. That it will in some cases produce remarkable results in a few days has been conclusively proven. That castration should be more permanent in its value than simple drainage is scarcely to be questioned. The theory of its influence in reducing prostatic enlargement is that it destroys or modifies the sexual function of the prostate, and greatly dimishes its vascularity. That the theory has a practical foundation in fact seems indicated in view of the large number of cases already reported where rapid reduction in size, and greater or less restoration of the urinary functions have occurred within a few days. With only a little

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over a hundred cases already reported it is yet too early to attempt to define the scope of this operation. Its comparative safety and easy performance will undoubtedly make it sufficiently popular among surgeons to insure ere long sufficient clinical data to determine its real value. I was much interested in listening to a paper upon this subject by Dr. White, one week ago, at the meeting of the American Association of Genito-Urinary Surgeons. Dr. White spoke very enthusiastically of the operation in properly selected cases, but admitted that there were many instances where it would do no good at all. The preponderance of opinion expressed in the discussion of Dr. White's paper was rather adverse to the operation. Some favorable cases were reported, but the majority of opinions seemed to be that the benefit of this operation lay in the direction of its relief of prostatic congestion and oedema, and not in producing atrophy of the hypertrophied prostatic tissue. Dr. White claimed, however, to have fully demonstrated, both clinically and microscopically, that the removal of the testicles does produce atrophy of the prostate.

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GENERAL DISCUSSION OF THE THREE PRECEDING PAPERS.

DR. DONALD MACLEAN, Detroit: Being engaged in another seetion, I did not hear the reading of Dr. Tappey's paper, but since coming into the room I have had the privilege of looking it over, and it appears to me that there are in it some very important suggestions with regard to the treatment of stricture of the urethra.

The operation mainly discussed by Dr. Tappey in his paper is external urethrotomy, not always perineal ; but as a matter of fact, organic stricture of the urethra is nearly always situated in the membranous portion of the urethra. That is the real habitat of organic stricture, and when external urethrotomy is spoken of the surgeon very naturally refers to the perineal operation, as that is where it is most commonly found, in the membranous portion. You will sometimes hear the expression "prostatic stricture." Now according to my belief there is no such thing as prostatic stricture. The museums of pathology all over the world have been searched in vain to find a case of stricture in the prostatic portion of the urethra. Of course there are obstructions there from tumors and various other causes, but not from organic stricture, that is, a stricture which results from the development of inflammatory tissue in the walls of the passage, causing a narrowing of the passage and difficulty in urinating. Nor is there stricture at the neck of the bladder, unless it is caused by an enlargement of the prostate, or something of that kind. We do not have stricture in the prostatic portion or in the neck of the bladder at all, in the sense in which we have stricture of the membranous portion. In the membranous portion of the urethra the vast majority of cases of stricture are found, and when Prof. Syme established and developed the pathology and treatment of stricture of the urethra, when

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he invented the grooved staff, with the small end and the shoulder further on, and laid down the laws so plainly, distinctly, and unmistakably for performing that operation, it was for stricture of the membranous portion of the urethra.

At the same time the fact remains that sometimes we do find in the penile portion, anterior to the scrotum, such a thing as organic stricture. We may see that occasionally, but, comparatively speaking, very rarely. I should not like to say exactly what the proportion is, but I should think that for one case of stricture anterior to the scrotum we find five hundred in the membranous portion of the urethra. I may be mistaken about that, but that at all events would be my estimate, as the result of my own experience. I have found organic and obstinate stricture anterior to the scrotum, and have treated it as Doctor Tappey suggests, by the external operation, passing the grooved staff through the urethra, cutting down on the staff, and dividing the whole of the strictured tissue from one end to the other, cutting from sound texture at one side of the stricture right through the stricture into sound texture beyond.

And I would add that in my opinion stricture anterior to the scrotum, stricture in the penile portion of the urethra, is much more amenable to treatment by dilatation than when it occurs in the usual seat of stricture, namely, in the membranous portion of the urethra. I think treatment by dilatation is much more satisfactory, much more successful, and relief much more rapidly produced by dilatation, in the anterior portion than in the posterior portion. I think that in a given number of cases, say a hundred cases of stricture in the membranous portion, and the same number ot cases in the penile portion, anterior to the scrotum, you will feel called upon to perform external perineal urethrotomy three or four times as frequently for the posterior as you will for the anterior stricture. I do not know that the subject has ever been discussed from the statistical point of view, or that there is any authority on the subject; but that is my impression

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about it. I have very rarely indeed felt called upon to divide the stricture anterior to the scrotum, because it has generally yielded to treatment by gradual dilatation. Of course, wherever the stricture is, whether in the meatus or in the penile portion, the treatment by gradual dilatation is the ideal treatment. It is the preferable treatment. It is the treatment which is to be used first of all, and it is to be given a fair and thorough chance before we think of anything in the way of an operation. But when dilatation has been fairly and thoroughly tried and has failed, then, with all due deference to all the other methods that have been suggested during the last half century, and with all due deference to all the appliances which have been invented, I still feel solidly convinced that, of all the methods hitherto devised and practised for the relief of organic stricture which requires an operation at all, external perineal urethrotomy is the best. In my opinion it has never been improved upon. And I am sorry to say that my own personal experience in this department of surgery has forced me into the unpleasant belief that a good deal of what we might call unjustifiable surgery has been practised. I have had pass through my hands many cases where I have explored the urethra thoroughly, passed the largest instruments, convinced myself absolutely that there was no contraction of the urethra, where the instrument passed through smoothly right into the bladder, without the slightest trouble, and still the patient complained of some local irritation. It has often been a question in my mind whether that irritation was situated in the urethra or in the brain; very often, I think, in the brain; and the first thing I have known, that patient has been away to some eminent genito-urinary specialist, and has had his stricture treated by internal urethrotomy. Now it is a very easy matter to make a little slit in the lining membrane of the urethra, and to tell the patient that he has been cured of an organic stricture by internal urethrotomy.

Still, I do not condemn internal urethrotomy. I think it is

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a good operation in certain cases. I think there is a certain field for it, and perhaps I should not be justified in deciding, on the strength of my own experience, between it and external urethrotomy. I simply say that for myself, I give the preference to external perineal urethrotomy, and I think the statistics, the records of surgery as a whole, will show that it has given the best results. What I do say is that I think the operation of internal urethrotomy has been carried to an unjustifiable extent. Of that I have been convinced from my own experience.

There is one other subject to which I wish to refer, in connection with Dr Tappey's paper, and that is the expression "impermeable stricture," which is used in the paper. I think the paper is a very excellent, carefully prepared, and interesting one; but I wish to say, with all due deference to the author of the paper, that I think the expression "impermeable stricture," ought to be stricken out of the medical lexicon entirely. It is a long time since Prof. Syme declared that there was no such thing as an impermeable stricture. I have been fussing away with strictures ever since I became acquainted with Prof Syme, forty years ago, and I have never yet found an impermeable stricture. True, I have had cases, and some exceedingly remarkable ones, of obliteration of the urethra from accident. I have had two or three cases of that; two cases where a horse had rolled over the patient, causing fracture of the pelvis, and absolute obliteration of the urethra; so that the patient came to me passing all the urine through a fistula behind the stricture. That of course was not a case of impermeable stricture, but it was obliteration of the urethra. That is one thing, and impermeable stricture is another. What I mean to say is, that in my experience, which has not been so very small, I have found that Prof. Syme's doctrine is true as a rule, that so long as urine can be passed through the urethra by the patient, even if it is only drop by drop, an instrument can be introduced; perhaps not at once, perhaps not to-day, at nine o'clock in the morning, or at two in the

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afternoon, but by patiently working, proceeding cautiously, studying the shape and peculiarities of the urethra, and by using a delicate, sensitive, gentle touch, I believe that an instrument may always be worked through the stricture. And in many cases where I have had the utmost difficulty, where I have spent the longest time in passing the smallest instrument through the stricture into the bladder, in some of the most obstinate and difficult cases, the relief has been the most rapid, the improvement has been the most marked afterwards. I pass the finest instrument to-day, leave it in for a few minutes, and in two or three days another, and so on ; and I have been able by gradual dilatation to secure absolute relief and cure of an organic stricture through which the patient passed urine drop by drop before the operation.

So I think a distinct line ought to be drawn between impermeable stricture and obliteration of the urethra. You may say the stricture was a very tight one, a very crooked one, and a very difficult one ; but it is not impermeable so long as water passes through ; and when water does not pass through, then it is obliteration of the urethra.

I wish to say one word in reference to another subject. A few years ago, if you remember, we used to hear a good deal about the treatment of organic stricture by electricity. Now, so far as my observation goes, we have not heard so much about it lately ; and so far as I know, the efforts to cure organic stricture by galvanism have pretty much passed out of the field of practical surgery. That is only in accordance with views which I expressed a good many years ago, and which I have always held. It has never seemed to me to be a rational, reliable method of treatment. I thought it as well to call attention to this fact while we were on the subject.

In regard to Doctor Wishard's paper, which I think was a very interesting and able one indeed, I wish to add my voice to his warning injunction against the too common practice of the operation of castration. I think it is an operation which ought to be approached by surgeons with great care. I think

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we have had experience enough from another quarter to warn us against being too ready to perform that mutilating operation. When I think how frequently we are worried to-day by patients who come to us after having the ovaries removed, women suffering from mental depression, from hysteria, sometimes from insanity, from profound mental revolution, an entire change in the nature of the woman—even although the ovaries were diseased and their removal was resorted to as a life-saving measure,—still, how often do we find exceedingly unpleasant mental effects following that operation. So I think it is very likely to be with the operation of castration. Now an old man who is suffering from chronic cystitis and enlarged prostate is a pitiable object. His life is a burden to him, and almost anything would be submitted to in the hope of some relief. And while I do think it is reasonable to suppose that the removal of these organs, when this trouble is of a congested nature, might have a quieting effect, might set up a process of atrophy instead of hypertrophy, so that something might be gained in that way; while I think in some cases it may be a proper measure to use, yet I do not believe that it is to be regarded as a universal method for the relief of diseased prostate and cystitis in old men. I believe that in a good many cases it will do no good, but a great deal of harm, and bring discredit on surgery, and be unsatisfactory to the patient. I believe that cases of that kind should be kept under observation, should be the subject of faithful, honest, and candid consultation among different surgeons, and should be approached with a great deal of caution. I have thought that of late there has seemed to be a tendency to rush to the performance of this operation. Castration is a simple, easy, safe operation, which almost anyone can perform; but I do believe that it becomes us in our discussions here, and in the exercise of our influence everywhere, to proceed in the direction of conservative surgery as much as we can. While I believe in radical surgery where it is proper

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and required, I do stand up for conservative surgery, and in this very matter I think that is of very great importance.

Dr. Wm. T. Dodge, Big Rapids: It occurs to me that in the discussion of urethral stricture to which we have listened the different kinds of strictures, and the differences in treatment of these several kinds of stricture, have not been sufficiently mentioned. There are some kinds of stricture which, as I have found, yield very readily to treatment by the use of sounds. They have no particular tendency to re-contract, and these cases I have found to be very satisfactorily treated by dilatation. There are other classes of resilient stricture, passable by a sound of considerable size, where at the next visit of the patient the stricture will be found to be constricted as tightly as on the previous visit; and it seems scarcely necessary to subject the patient to the operation of external urethrotomy. In this class of cases I have had great satisfaction in the use of the internal dilating urethrotome. In about thirty cases in the last five years where the use of sounds has produced considerable irritation, where the stricture had a tendency to re-contract very rapidly, I have used the internal dilating urethrotome, and the reaction produced by the use of the instrument is in many cases not so great as by the use of the sound. Sounds are of course to be used afterward. The urethrotome is valueless unless the passage of sounds is continued afterward for an indefinite time. In tighter strictures I think there is less danger in making the external operation, as Dr. Maclean says.

I think the thanks of the section are due to Dr. Wishard for the very valuable and instructive paper which he has presented to us. His remarks in regard to castration reminded me of the address on surgery delivered at the recent meeting of the American Medical Association, by Dr. Wheaton, of Minneapolis. He remarked that he had had no experience in the operation of castration, as among his patients there seemed to be a prejudice, among the male sex, against the loss of any of their organs, especially these, and for that rea-

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son he feared the operation would never become popular. And all of us who have had experience in genito-urinary surgery and cases of tumor of the testicles, I think, will readily agree that we find there is very great objection on the part of most men to the removal of these organs, even if the organ itself is enlarged by the tumor. I call to mind one man who has had one tubercular testicle removed ; the other one is in the same state, and is as large as his two fists, but he says he is going down with the testicle.

DR. SCHUYLER C. GRAVES, Grand Rapids : I wish to add my testimony to what has been said concerning the value of the paper to which we have listened.

To me it has been for a great many years a surprising fact that not only the laity but doctors believe that the operation of internal urethrotomy is not as serious as that of external urethrotomy. I have had occasion to operate upon quite a good many men for stricture, many of them doctors, for doctors do get stricture. Of course when a doctor gets stricture it is due to slipping on the ice, or falling on the pommel of a saddle, or now-a-days to a bicycle accident. Almost always when I have been called upon to operate upon doctors, they have wanted to know if I was going to make an inner cut or an outer cut ; and when I have said, as I almost invariably do, that I am going to make the outer cut, the external operation, they are disappointed, and sometimes they back out. Now it is my experience that the operation of external urethrotomy is far safer than the operation of internal urethrotomy, except in certain cases. I never do the operation of internal urethrotomy except in cases where there are bands or slight annular strictures which can easily be cut, and which, when cut, are not likely to be followed by re-contraction. But the operation of external perineal urethrotomy has been, in my hands, an eminently safe one. I have never lost a patient, and I have done the operation a good many times.

The paper of Dr. Robbins has not been touched upon. It is new to me. I have never seen the cystoscope, and I be-

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lieve, after seeing the instrument and listening to the doctor's instructive paper, that the instrument is a valuable aid in diagnosis.

There is one point that comes to my mind now in regard to which Dr. Maclean spoke, and that is the influence of electrolysis in the cure of stricture of the urethra. I cannot disbelieve in it. I have seen cases in Grand Rapids that I know were benefitted, and permanently benefitted, by the galvanic current. I cannot believe that its effect was due to the dilating qualities of the bulbous electrodes, for there has been no re-contraction in several years time in several cases that I can now recall. And I do believe that in resilient or irritable cases of large caliber, not tight enough strictures to demand cutting, and yet too irritable and resilient to allow treatment by gradual dilatation—for there are urethrae that will not tolerate sounds—I do believe that in such cases, especially ff comparatively recent, the galvanic current does stimulate absorption.

Now in regard to prostatectomy operations. They are all well enough in their way. They are brilliant operations, and they are just as dangerous as they are brilliant; but I must confess that I have been captivated by the William White operation. I know that there must be limitations there. I know that we must not operate promiscuously upon men, mutilating them; but, as Dr. Maclean says, these cases are deplorable. I believe I would prefer to be insane than to have such a condition myself; but I cannot think there is much danger of mental alienation in these cases. It does seem to be the fact, vouchsafed by such men as White, Joseph Lister, and others, that where we have cases of hypertrophy of the prostate atrophy does occur after castration. Of course, where there are fibrous tumors we cannot expect it, or where there are malignant diseases; and in the cases where rapid recovery ensues I cannot myself think, as the orator to-day has stated, that there has been any particular atrophy. I think these rapid results must be due to a diminution of the

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oedema or congestion, or some such cause as that. But I believe it is beyond question that there is a disappearance of the hypertrophy. I have had a little correspondence lately with Dr. White on this subject. He issued a circular some time ago, perhaps most of you have seen it, calling for data in regard to unilateral castration, as showing the effects of such operations upon hypertrophied prostates, or upon any prostates. I had had occasion, three or four years ago, to remove a syphilitic testicle from a young man, it being the right organ, and I called him in and examined him, and found that there was a very decided atrophy of what might be termed a normal prostate, upon the right side. I wrote to Dr. White, telling him what I had found, and he immediately answered stating that that was just the information he wanted.

Now if it be a fact that unilateral castration will bring about atrophy, the question of alienation of mind, the question of unsexing or devirilizing a man, will be done away with, for a man with one testicle is as good practically as one with a thousand. So I think that if it be proven that unilateral castration will produce atrophy sufficient to cure cases of this kind, we have there a most brilliant operation, comparatively simple to the surgeon, and safe to the patient.

Dr. Theo. A. McGraw, Detroit: The remarks of the last speaker have called a case to my mind, a case in which a gentleman had an enlargement of the prostate. He was an old man, and had had a great deal of trouble with his water. He was absent in Europe, and he got a sloughing of one of the testicles and lost one of his testes. He came home and I examined him again, and his prostate was just as bad as ever. He could not pass water a bit better. While Dr. Graves was speaking, I was wondering if that was the kind of a case Dr. White would like to have reported to him also.

I have seen some wonderful immediate effects in one or two of Dr. Walker's cases, from castration. There was no question about the fact, whatever the cause, or whatever the pathology. I performed one case of castration myself. It

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was a total failure. The man died. That was a case of cystitis. His bladder was in very bad condition; the prostate was enlarged, and there was great difficulty in passing a catheter. I castrated him. He did not die from the effect of the operation. The wound healed up; but he simply went from bad to worse, and died without any relief.

Some of Dr. Walker's patients whom I saw were able to pass their own water, who had not been able to do so before for months. There is the difference in the experience which we have had. It is too early yet for me to come to a definite conclusion about the matter.

Now with regard to strictures, I wish to say a word or two. As regards impermeable strictures I do not think it is worth while to stand upon any little question as to the meaning of words. If you have to work five or six hours to introduce a small bougie, I call that stricture practically impermeable; it is unnecessary to do that, and I do not think it is good practice. I think that to work over such a narrow stricture, introducing bougues one after another to find a little, tortuous opening, with the risk of introducing septic material all the time into that urethra, is a very much more dangerous practice than cutting through any stricture by urethrotomy. It is unnecessary. You can make an external urethrotomy without any guide whatever, and without any difficulty in finding the posterior part of the urethra. And to fuss with a guide, increasing the irritation and the danger of the introduction of septic matter, is not, to my mind, in harmony with our improved methods of practice. So I object to that kind of fussing in very tight stricture. I think there is no operation so safe, so absolutely safe, as external urethrotomy where the patient has not yet become septic, where you simply cut down upon it, cutting through all that hard strictured mass. Cut through those false channels, take away that false tissue, sometimes even resecting the urethra and sewing it together in appropriate cases, washing out the bladder, dilating the urethra then with large sounds. I do not think there is any operation for stricture which is so safe as that.

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DR. E. B. SMITH, Detroit: I thought the last speaker, Dr. McGraw, was about to mention a kind of stricture that has not been touched upon to-day, that where the mucous membrane is lost for a space in the entire caliber of the urethra. I think these are the strictures in which external urethrotomy especially meets the requirements. Dr. McGraw did not mention simply the mucous membrane being lost there, but that is what I think he meant to take up when he spoke of cutting down through upon those strictures and making a sort of plastic operation, and, as the Doctor intimates, bringing the ends together and sewing them. These are the strictures from which we get the brilliant results in external urethrotomy.

While I am on my feet I wish to mention a case in which I operated about four and a half years ago where I took out the right testicle of an old gentleman about sixty years of age who was at Grace Hospital, Detroit, for a short time. He had an enlarged testicle and chronic orchitis; there was some breaking down of tissue; hemorrhage took place and, from that, hematocele. Sloughing was about to take place, and at his earnest request, to relieve him of this condition and the excrutiating pain, I extirpated the testicle. That man has got well, and is relieved of a cystitis which was somewhat chronic, the relief of course being due to the atrophy of the prostate. That man is living to-day in Detroit, and is certainly very much better. The prostatic hypertrophy has gone down to about one-third of its former size. It is as large as a common prostate at the present time.

DR. F. W. ROBBINS, Detroit: There are one or two things I should like to say in regard to Dr. Tappey's paper and the discussion that has arisen in connection with it, and that is to direct attention to the manner in which the sound should be used in dilating strictures of the penile portion of the urethra. I do believe that strictures in the penile portion of the urethra are more common than would be indicated by the remarks of our friend, Dr. Maclean. It happens very fre-

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quently that you can pass a twenty-two, twenty-four, or even a twenty-six sound into the urethra without any trouble whatever, and still there may be a stricture present. If the surgeon contents himself under such circumstances with that kind of an examination, he will not find the stricture. When there is an irritable urethra there may be pus present which you cannot see issuing from the meatus, but which you can see when the water is passed in a glass. When you do find strings of pus after the patient has had a gonorrhea two, three, four or six years, it is absolutely impossible often to determine the stricture unless you use the bulbous sounds. A bulbous sound number 26 or 24, on being withdrawn will detect the stricture, even when a common 28 sound would not. After detecting the stricture, if you will pass the urethroscope down to the point where you have detected the stricture, and cast reflected light into that urethra, you will very frequently find the scar of a stricture. As you draw the urethroscope forward you will find the mucous membrane pale at the point where the stricture or irritable point is.

Now I do not wish to take up time, but I do want to protest against allowing patients to have strictures in the penal portion of the urethra. When you are treating a case of chronic urethritis, making examinations by all the methods which we know, we can often find irritable spots which will eventually produce stricture which will require external or internal urethrotomy; but it does not seem to be necessary to let them go to that extent. Patients can be examined, and strictures can be found by the use of the bulb, when, as I have said, you might pass a larger sound and have no idea that a stricture is present. By treating these cases over and over again I have found the irritation to subside and disappear altogether, have found the urine to clear up entirely, and even after ten or twenty years I do not believe the patient will ever have a stricture. It is my claim, and was in my paper that I read last year before the society, that strictures are produced by the carelessness either of the patient or the phy-

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sician. I believe that most strongly. Now very often strictures of large calibre do exist which can be cured by the use of the sound, completely, so that they will never return.

DR. MACLEAN. I should like to say that Dr. Robbins misunderstood me. I do not deny the existence or possibility of strictures of large calibre. I have never used the urethoscope, but I have examined with the bulb sound and by other means, and I have had cases where I have convinced myself positively that there was no stricture, whatever else there might be, and yet those patients have afterwards been subjected to the operation of internal urethrotomy. I think I can find a stricture if there is one; perhaps not as readily as Dr. Robbins, but I think, as a rule, I can determine really whether there is a stricture of small calibre or of large calibre. The point I wanted to make was that I believe a great many patients—I have known of quite a number—have been subjected to the operation of internal urethrotomy where it was a criminal act of malpractice to subject the patient to that operation. I do not condemn internal urethrotomy. I prefer the external as a rule. Sometimes the internal is all right. I do not condemn it in proper cases. I do not deny the existence of strictures of large calibre, but I do protest against performing operations for stricture where no stricture exists.

Now there is one other remark I think I ought to make as a matter of justice to the records of this meeting, and that is to protest against Dr. McGraw's bold, dashing, heroic treatment of stricture of the urethra. I do not think any man is justified in laying down the doctrine—especially a gentleman in Dr. McGraw's eminent position—that an external urethrotomy can be done with perfect safety without a guide. To slash right into that mass of oedematous tissue, perhaps with fistulous openings, with changed position of the structures by reason of the diseased conditions—to go in there in that rash, haphazard manner, I must say, to my mind, and I merely give it as my opinion, that it is not good surgery, that it is unsound

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surgery to teach. I am perfectly convinced of that. Of course it is natural that I should take a great interest in the subject of urethral surgery, having been taught it by the very father of urethral surgery, the very man who first established the pathology and the treatment, and who transformed the treatment of stricture of the urethra from being one of the very worst of all the opprobia of surgery, to be a safe. elegant, and beautiful operation. The operations before the time of Syme, performed in the very way Dr. McGraw describes, were among the most deadly of all operations. The mortality was something frightful. It was then that Prof. Syme took hold of the subject, studied its anatomy and pathology, worked out methods of treatment, and laid down those principles which, although somewhat modified since, with all their modifications still remain the same solid, fundamental principals. I think it is a pity to wipe out and abolish those principles which for so many years have been the sheet anchor of the surgeon so far as urethral stricture is concerned. The operation of passing a sound through a very tight stricture nowadays, when we have local and general anaesthetics, is not such a terrible matter. A little time does not amount to anything. I have seen a great many patients in my time who have been aspirated because of retention of urine. I have seen many who have had the urine drawn off by the rectum. I can stand here to-day and testify, sincerely and honestly, that up to the present time I have never aspirated a man's bladder, and I have never punctured a bladder from the rectum. I have never come across a case of retention of urine in which I have not been able to draw off the urine through the urethra. I say that in no spirit of boastfulness, but as a simple matter of fact, and I would rather exert any influence that I may have in my profession in favor of careful, scientific, anatomical, sound surgery, than in favor of haphazard, unanatomical surgery such as has been suggested by my friend, Dr. McGraw. As he spoke it gave me a shudder right down my back.

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DR. MCGRAW: I am very sorry for my friend's extremely sensitive feelings. What I said was this, and I stick to it, that any surgeon who knows what aseptic surgery is knows that the principle thing in surgery nowadays is to keep a wound aseptic. To bring up the question of the mortality before the days of Syme and the old fathers is simply an absurdity.

Now I was speaking of impermeable strictures. I was not speaking of strictures through which you could easily pass even a small sound. I was speaking of impermeable strictures, and I say again that rather than work for hours, again and again, day after day, in order to pass sounds through an urethra already somewhat septic, carrying those sounds down to that point and pushing them blindly in order to find a minute, narrow orifice through the stricture, it is better surgery to cleanse out that urethra first by injection, washing it out, making it just as aseptic as you can, making it aseptic externally—and I should be glad to have the doctor adopt these antiseptic precautions—make it thoroughly aseptic, and then cut down upon that stricture, cut down in front of it, find if you can the orifice so as to pass through some little sound if you can without injury, cut it through anatomically. You have your urethra behind and you have your urethra in front, and I think any gentleman here can cut a straight line between these two places. Then, with the parts open, carefully examine into that stricture. I think that is better surgery than the blind way of working inside a canal that has already become septic, increasing the dangers of that sepsis. The surgery of to-day is to keep things absolutely clean and sweet, and then surgery is safe.

DR. MACLEAN: While I do not wish to take up too much time, I should like to ask our friend, Dr. McGraw, this question. I do not know any man with whom I would rather have a little tussle than with him, because when he speaks he speaks with the honesty of belief and the courage of his convictions. I should like to know by what application, by

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what possible treatment you are going to keep an urethral wound aseptic when the urine has to be passing through it all the time? The urine must pass over that wound. The wound must be open. It is exposed to the air, it is exposed to the urine, it is exposed to the gases passing from the rectum. You cannot protect it. If Dr. McGraw will show me how to make the urethra aseptic before the operation and keep it aseptic afterwards, I will give him my most cordial thanks.

DR. MCGRAW: I do not like to take up too much of the time of this society. A stricture is very apt to become septic. There are often false passages in which there is more or less pus. There is often behind the stricture a cytistis, with decomposing urine. Now if you want to make that stricture aseptic, you must open it up so that there will be no retention of pus or other septic matter. That is the way to make it aseptic. Open it up freely. Open up every little channel, take away the septic material that is already there—those little septic granulations. Cut away some of that fibrous material which clogs up the whole urethra. Wash it out with boracic acid, and then you have got an open wound. You cut not only through the stricture but a little behind it. The urine comes out and touches the wound, but it is drawn right off. It is not retained. It cannot stay there to decompose. That is what turns a septic condition into an aseptic condition, because where you have no retention of the urine and no retention of fetid matter, where it flows off, then soon there ceases to be absorption.

DR. MACLEAN: It is a curious fact, that no man from Syme's day to this has beaten his statistics. There is no man who has performed as many cases of external perineal urethrotomy with so small a mortality as James Syme; and that was before the days of aseptic surgery.

THE CHAIRMAN: This is a very interesting discussion. Will not Dr. Wishard give us some of his views on the subject?

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DR. WISHARD: I have only a word to add to what I said in my paper; that is to express the hope that I will not be misunderstood as having condemed the operation of castration for an enlarged prostate. Undoubtedly it has accomplished very great good in many cases. Undoubtedly it does produce very immediate and remarkable relief of the prostatic and bladder congestion. In many instances it probably produces atrophy of the prostate. I have had no experience in the operation myself for that purpose. I have castrated a number of men for other purposes. I have in mind a patient at home upon whom I operated four years and a half ago for cancer of the penis, where the ulceration had extended far down on the organ and involved the scrotum. I was compelled, because of the great destruction of tissue, to remove both the penis and the testicles. There was fortunately in this case no involvement of the inguinal glands. I cut to the urethra, down in the middle of the perineum, transversely, dissecting the corpus spongiosum from the corpora cavernosa, and then dissected out the corpora cavernosa entirely, removed the testicles, completely obliterating all the external genital organs, turned the urethra down into the wound, stitched the urethra to the margin of the skin, closing the wound perfectly, putting in a catheter for drainage, and the wound closed up very quickly. I have had on opportunity several times to examine this old man. I examined him last within a week and he is still perfectly well, with no recurrence of the cancer. There is quite an appreciable prostate in that particular case. The prostate was not enlarged in the beginning. There were no bladder symptoms of an hypertrophied prostate, and I do not recall that I made an examination of the prostate with an especial view to determining its exact size at the time I operated, but at the suggestion of my friend Dr. Belfield, of Chicago, I did examine the prostate subsequently to determine its size definitely, and have several times since examined it without finding any apparent shrinkage.

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I wish to say one word with reference to the subject of stricture. I was quite interested in the discussion of this subject. I think there is a pretty universal agreement with reference to the location of strictures. I think the collection of cases of Sir Henry Thompson, numbering two hundred and seventy-six, I believe, which he dissected upon the dead body, showed about sixty-six per cent. of all strictures to be in or about the membranous urethra, either in the membranous urethra or within one inch in front of it. The remaining strictures were located at varying points from an inch in front of the bulbo-membranous juncture, forward towards the meatus.

As to the treatment by dilatation, in the majority of cases I think there is also a pretty universal agreement that it has accomplished most excellent results, and that strictures, for example, like a superlinear stricture, represented by a silk thread tied around the mucous membrane and contracted, will easily be broken up and absorbed and the cavity remain open with a very few dilatations ; but when we have a dense annular stricture, or where we have a combination of strictures, and where the tissue has become deeply involved, my own observation has been that dilatation is not so satisfactory by any means, and that oftentimes we have to resort to cutting.

As to the question of impermeable strictures, I have unfortunately not possessed the skill of Dr. Maclean, or perhaps I have been more unfortunate than he has in the class of cases that has fallen to my lot. I have on several occasions found strictures through which I could not by any possible means pass an instrument. I recall one in a boy of sixteen or seventeen years, a traumatic stricture. The boy was putting a bridle on a horse in the barn, standing on the manger. The horse turned its head to one side and knocked him off. He came down astride the manger, producing a very bad traumatic stricture. I remember that in that case, even after I cut down into the perineum and caught a stitch in either side of the urethra and drew it out as well as I could, that even

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then I could not pass an instrument through that stricture, which was right before my view, right immediately at the end of my finger, and I had to split the urethra back, cutting the cicatricial tissue as you would cut a piece of thick sole leather. In that very case the boy could pass a little water. Water will come through strictures that I have not been able to get an instrument through.

As to the paper of Dr. Robbins, I was much interested in it. Oftentimes in using the cystoscope for making examinations of the bladder, where there is an enlarged prostate, the greatest difficulty is met with. In some thirty-four or thirty-five cases that I have operated on for an enlarged prostate, out of the entire lot I have only been able to find one case where I could, by introducing the cystoscope through the meatus, definitely locate obstruction. In that particular case I was able to locate a pedunculated growth on the left side of the vesical orifice, and to very clearly make it out. I immediately made a perineal incision and put my finger in the bladder, finding the growth and removing it with the finger.

As to the possibility of using the cystoscope in cases of enlarged prostate where you have already made a perineal incision, either for the purpose of removing prostatic tissue or giving the bladder drainage, I think we have a very much larger field of usefulness for the cystoscope. I have several times introduced the cystoscope through the perineal wound which I had made for the purpose of removing prostatic growths or for draining the bladder, and have secured most perfect access and inspection of the inside of the bladder. It occurred to me while listening to the paper of Dr. Howard Kelly, at Baltimore, three or four weeks ago, and then again while listening to Dr. Robbins paper to-day, that there was great possibility of inflating the male bladder with air, and inspecting it the same as Dr. Kelly does the female bladder, if it were done through the perineal opening, the opening into the urethra; that is, by the insertion of the finger, dilating the canal, inserting a hollow tube, and putting the patient in the

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knee-elbow position so that the abdominal contents would fall forwards. The male bladder will fill with air quite as directly as the female bladder does, in the same way Dr. Kelly uses his instrument. I have not done this, but I suggest it as a means of more thorough inspection of the male bladder in cases where it is desired to make such inspection.

DR. TAPPEY: If I may be allowed to speak from the chair, I wish to say that I feel very much interested in the two papers other than my own. I was particularly interested in Dr. Wishard's description of the drainage of the bladder, in his statement that the bladder is more efficiently drained by a tube above the pubes than through the perineum. I thought of a case I had several years before, where I removed a large median lobe, as large as a small orange, resulting in the death of the patient. Ever since I had regretted very much that I did not make an auxiliary opening in the perineum. The growth was removed through an opening above the pubes, and I was very sorry that I had not drained as well through the perineum. I was very much interested in the doctor's statement that the drainage is more efficient through the suprapubic opening.

The use of the cystoscope, mentioned in Dr. Robbins paper, and his supplemental remarks as to the use of the urethroscope in detecting the location of strictures of large calibre, were also very interesting to me. That seemed to me to be perhaps as practical a use of these tubes as any we could think of, and that in finding the location of strictures of large calibre perhaps it would be used more frequently than in determining disease of the bladder with the other instrument.

Referring to Dr. Maclean's remarks upon the use of the word "impermeable" as applied to strictures, I must say that we all have to adapt our language to our own abilities and experiences. In writing this paper I have tried to imbue myself with the spirit of Syme. I have been very much interested in his writings, and I have become a very great admirer

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of Syme and of his literary abilities, and I was very well aware of his attitude in this particular matter, remembering his statement that he never had met with a stricture that he had found impermeable to his staff.

I have been correspondingly impressed with admiration for the man; but at the same time I could not take any such stand, and I did not feel like taking any such attitude in the use of the word impermeable, because my experience has been entirely different. I am very well aware that my experience and my skill are both very much less than Prof. Syme's; still I must say that I think there are, even for men of very considerable skill in the use of the sound in the strictured urethra, a great many strictures that are practically impermeable. That is why I decided upon the use of this word to classify one form of stricture, which practically is impermeable to the sound and even to the filiform bougie in the hands of the great majority of surgeons.

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SHOCK.

W. S. CONNERY, M. D.
Saginaw.

Shock is a disturbance of the functions of the nervous system, induced suddenly by a violent stimulation made directly on the nerve centres, or indirectly through the peripheral nerves, whereby the harmony of action of the great nervous centres, more especially of the sympathetic ganglia, and through them of the various organs of the body, becomes deranged. It is essentially a depression of nerve force, and bears in effect the same relation to the nervous system as syncope to the vascular.

Shock may be produced by a great variety of causes, some of a bodily, others of a mental character; some external, others internal. It may be purely nervous, or partly nervous and partly hemorrhagic. The nature and extent of the shock are greatly influenced by the state of the general health at the time of the accident, the amount of injury, the importance of the part directly assailed, and also, in an especial manner, by the idiosyncrasy of the individual. There are some persons, soldiers for example, of the most undoubted courage, who fall into a state of most profound prostation from the most trifling accident; and who are, as it were, completely stunned by injuries so insignificant as not to effect, in the slightest degree, ordinary persons. Such an occurrence can only be explained by a reference to idiosyncrasy; and it has its counterpart in those persons who, although extremely plethoric, faint from the slightest loss of blood, or even from the mere sight of that fluid. There are other persons on the

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contrary whom hardly any accident, however severe, can shock; they are insensible to pain; their nervous system is obtuse; nothing affects them either bodily or mentally; a severe blow may stun them, but the impression is transient, and in a few moments they are completely restored to consciousness and power.

The causes may be divided into the predisposing and the exciting. Certain conditions prior to an operation or injury tend to make the shock more severe, and may therefore be regarded as predisposing. Such are Bright's disease, hepatic and cardiac troubles, a highly nervous and hysterical temperament, enfeeblement from old age, etc.

Among the exciting causes may be mentioned mechanical injuries, especially if very painful, or attended with hemorrhage, or if in certain localities, e. g., the abdominal viscera, testicles, or large joints; burns and scalds, especially when extensive or involving the trunk; undue exposure of the body to cold as during a long operation; the action of some irritant poisons; the sudden emptying of an over-distended bladder, etc.

Powerful mental emotions, as sudden fright, grief or joy are sometimes sufficient of themselves to produce severe and even fatal shock, but some visceral disease has generally been discovered in fatal cases from such causes. Fright, moreover, as when an injury is foreseen and expected, adds more to the shock produced by mechanical injury, as seen, for example, in railway accidents, burns from the clothes taking fire, etc., than when the recipient is excited by the predominance of certain special and local effects.

The most severe forms of shock are those that arise from gunshot wounds and railway collisions. The severely and deeply penetrating character of the injuries in the one case, and the suddenness of their occurrence with the terror inspired by them in the other explain the severity of their effect on the nervous system of the sufferer. In railway accidents death has been caused without any discoverable lesion,

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not only immediately from intense emotion, but later, after some days or weeks, from gradual failure of power. The nervous system is so profoundly affected that it is unable to recover itself; one single stimulus has left upon it an overpowering impression.

Fright is perhaps the very worst of the causes of mental shock, and nothing is more disastrous than the conviction that an operation will be fatal. The effect of terror in suddenly exhausting nervous power is well illustrated by the history of those persons who, sentenced to be bled to death, actually died on hearing water trickling into a basin, which they supposed to be blood issuing from their veins, after the arm had been slightly pricked, although no vessel had been opened.

On the other hand, in great excitement or intense mental preoccupation, not only shock but even pain is not felt, at least for the time. Afterwards, owing to exhaustion, reaction is usually more acute.

Loss of blood, if sudden, may of itself cause most intense shock, and in all cases is a very grave addition.

In children the element of mental emotion is much less prominent owing to their force being developmental rather than nervous or muscular, and consequently operations and injuries are better borne than by men in the prime of life, where all the organs are subservient to the exercise of nerve force. Unless there has been acute pain, great hemorrhage, or prolonged exposure to cold (all of which they stand very badly) children do not as a rule suffer from shock. Those are most liable to suffer from it whose nervous system is already in what must be called, for want of a better term, a state of depression, whether this is due to natural temperament, cold, exposure or fatigue, loss of blood or other accidental conditions.

The severity of shock, when the brain or spinal cord is not injured directly, is in a great measure proportionate to the degree of pain attendant upon an injury; and, as sensibility

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to pain varies greatly in different individuals, so will the attendant shock be greater in some than in others. Men who live hardy out-door lives are less sensitive to pain than those who follow occupations of an opposite kind. The higher man rises in the scale of civilization, the more acute does his sensibility to pain appear to become, or possibly the less able he is to bear it.

The symptoms of shock necessarily vary considerably. They are generally such as attend syncope from loss of blood, or concussion of the brain, which is itself only a form of nervous depression, or expenditure of vital force.

There are two varieties of shock; the one characterized by extreme depression, the other, which is much the more rare, by great excitement. Upon what the difference depends, why one form should occur and not the other, is not known.

When the injury is not severe, does not implicate important parts, or occurs in an individual of strong nerve, the symptoms are slight and passive. A momentary confusion, giddiness and pallor, with tumultuous action of the heart and a catch in the breath, may be observed. These symptoms speedily pass off and are followed by no other effect than a feeling of depression, physical and mental. In the ordinary form the patient lies in a semi-conscious state, quiet, with the eyes glazed and half closed; the limbs in the position that chance may have placed them; able to speak feebly and slowly, but entirely incapable of any mental effort. The sufferer becomes pale, cold, faint and trembling; the pulse is feeble and frequent, generally more or less irregular, perhaps hardly perceptible at the wrist; the arteries seem to collapse and empty themselves between each beat; the respiration is slow, shallow and sighing, and the temperature far below normal, falling at times to ninety-seven degrees, or even ninety-six degrees. There is marked muscular relaxation, usually yielding of the sphincters; urine, if the bladder was full at the time of the accident, is retained; but afterward, for many hours, the secretion stops almost altogether. The symptoms

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may gradually increase, and the patient die of syncope or asthenia; or he may gradually rally in a few hours and pass into the condition known as reaction. The pulse will then become full and increased in frequency; the temperature slightly raised; the face flushed; the skin hot and dry; the urine scanty and high colored; the tongue furred; and the bowels confined. Many of the feverish symptoms, however, that were formerly regarded as the result of excessive reaction, are now known to be due to septic poisoning. In the worst cases, such as are almost certain to prove fatal, there is complete absence of the sense of pain. I have seen patients dreamingly looking on, without any sign of intelligence, while fragments of bone were being removed and search made for bleeding arteries in crushed limbs.

The other variety, which is characterized by furious excitement, is more common. Its onset is nearly always gradual; at the first there is some ground for hope, and the general condition appears not altogether unsatisfactory, although the pulse is rapid and devoid of power. Very soon, however, the patient becomes restless and begins to talk volubly and incoherently; delirium sets in; the limbs are thrown wildly about utterly regardless of pain; and in a short time this is followed by a condition resembling furious mania. The result is invariably fatal.

On recovery from the immediate and depressing effects of shock, secondary phenomena of various kinds frequently present themselves. These are chiefly such as arise from lesion of the sympathetic nervous system and consequent disturbance of its vaso-motor action. Various functional derangements of the brain and spinal cord often manifest themselves; amongst these, headache, sleeplessness, diminution of mental power, and chorea are the most common. Tumultuous action of the heart, panting and dyspnœa upon exertion, congestion of the abdominal viscera, and in some cases hemorrhage from the intestines are also amongst the more common secondary phenomena of severe shock, and more remotely we find vari-

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ous thromboses. The depression of temperature consequent on severe nervous shock may last for a very great length of time, many months after the accident according to Erichsen. During the whole of this period the mind and nervous system continue in a weakened state.

Reaction after shock is denoted by a gradual, or more or less rapid resumption of the functions of the different organs, and one of the first evidences of this change is a return of color to the face, with an increase of the heart's action, as indicated by the state of the pulse, which is not only stronger and fuller, but more steady and regular; the respirations are more free and open; the surface becomes warmer and dryer; the sphincters again obey the will; and the mind regains its self-possession and power of reaction. Often the first symptom of reaction after severe shock is vomiting, followed by complete evacuation of the contents of the stomach, itself generally a favorable sign, as it is often indicative of a return of muscular power.

Shock must not be confounded with the effects of concussion of the brain or with syncope. It may be associated with, and its intensity materially increased by one or both of these conditions, but it commonly occurs independently of either. To differentiate syncope due to failure of the blood supply of the brain rarely causes any difficulty. From hemorrhage, especially when it is internal, the diagnosis may be impossible at first; but in the case of hemorrhage, when reaction takes place the pallor of the gums and conjunctivæ persists. In many cases of injury to the abdominal viscera it is practically impossible to make a diagnosis, the two are so often associated. Given a case of severe contusion followed by collapse, it may be due to shock alone, or to shock complicated by hemorrhage from rupture of the viscera or tearing of a mesenteric artery or vein; and there is no certain method of separating one condition from the other. Failure of sight due to anæmia of the retina, constant yawning or deep sighing inspirations, and throwing the arms about over the head

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are very suggestive of hemorrhage, but nothing more; and a great deal of blood may collect in the abdominal cavity without causing any marked degree of dullness.

There are no characteristic postmortem appearances in fatal cases of shock. The heart, rarely contracted, is more often found flacid, relaxed, and full of blood, especially the right side, and the whole venous system is somewhat gorged, unless the patient has lost much blood from the accident. The lungs are engorged, the abdominal viscera congested; but the brain is pale and anæmic.

In the light of present investigation, the pathology of this condition is obscure and doubtful, however much we may speculate and theorize.

The impression produced by the injury, operation, or mental emotion on the nervous centres, is believed either, first, to lead to paralysis of the heart directly through the pneumogastric nerves ; or second, to induce through the splanchnics a vaso-motor paralysis of the walls of the abdominal veins, whereby they become gorged, and the nerve centers and heart in consequence imperfectly supplied with blood ; hence, partly owing to deficient nervous stimulus, and partly to lack of sufficient arterial blood in the heart's substance and ganglia, cardiac paralysis ensues.

It is certain, I think, that paralysis of the vaso-motor nerves, probably inhibitory, is an essential part of shock ; but it is not certain whether it is universal or local. Goltz showed that when a frog is struck on the abdomen, its heart ceases to beat, and at the same time the portal system is vastly extended with blood. He supposes the former phenomena to be the effect of the latter, and the two together to account for the features of shock.

The exhaustion of the nervous centres thus induced is shown by the general state of muscular relaxation, the loss of tone throughout the vascular system, and the state of semi-unconsciousness into which the patient is thrown. The general relaxation of the vessels throughout the body thus occur-

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ing simultaneously with an extremely feeble action of the heart leads to an accumulation of blood, with partial stagnation in those parts of the vascular system which are most dilatable. This is especially marked in the veins of the abdominal cavity. The abstraction of so large a portion of the blood from the circulation causes anæmia of other parts, and it is in this way that the pallor of the skin and the anæmia of the brain have been explained.

The change is essentially a molecular one; the energy of the active tissues, especially the nerves and muscles, suffers the most extreme depression; they are incapable of putting out any force, or of producing the amount of heat requisite to maintain the temperature of the body; the power of doing work of any kind is lost.

The prognosis depends on the severity, on the persistence, and on the attending complications of the attack. Death may result almost instantaneously, even when the primary injury is apparently trifling, as in injuries to the abdominal viscera; or it may begin more gradually, and slowly become worse and worse until death ends the scene. A particularly dangerous condition is that termed "prostration with excitement," in which "the languor or stupor of collapse is succeeded by restlessness, tremor, and twitching of the muscles, often, but not always delirium of various degrees."

The condition of the pulse and the temperature together give the best clue (always provided that there is no hemorrhage), but a great deal depends upon the kind of injury. The maniacal form is nearly always fatal.

The treatment of shock must be conducted with two objects in view; to promote reaction, and to moderate supervening inflammation, for to prevent it altogether is by no means always possible.

In slight cases, beyond covering the patient up warmly in bed with blankets and applying hot bottles to the feet, nothing is required except, when there is much pain, a hypodermic injection of morphia.

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In severe cases the patient should immediately be placed recumbently, and the injured part arranged as comfortably as possible; all constrictions should be removed, and free access of cold air should be provided. Warmth is the first essential, warm affusions to the head, hot blankets around the patient, and hot water bottles outside these, with friction to the hands and surface.

Stimulants are usually required, small quantities oft repeated; as the pulse improves the intervals can be lengthened so as not subsequently to induce excessive reaction. If deglutition is practicable, brandy and water should be given, but do not try to pour liquid down a patient unable to swallow, lest it finds its way into the larynx. Under these circumstances ammonia should be applied to the nostrils, and a stimulating enema administered; or ten minims of ether may be given hypodermically and repeated at intervals of about ten minutes, if necessary, until the patient begins to rally. Morphia is beneficial, relieving the pain and so diminishing one cause of depression. Strychnia, atropia, amyl nitrite, and nitro-glycerine have each many advocates. Strychnia is perhaps a little slower in showing itself than the others mentioned, but it is more lasting. It increases the force of the pulse by direct stimulation of the heart muscle and its ganglia, while the rise of arterial pressure which it causes is due to stimulation of the vasomotor centers.

Transfusion is of very little use in shock uncomplicated with hemorrhage. A certain amount of benefit may be derived from raising the limbs and bandaging them so as to diminish as far as possible the area over which the blood in the body has to be distributed.

Occasionally reaction is sadly interfered with by an overloaded stomach, as when the accident occurs soon after a hearty meal. The indication obviously is to assist nature in her efforts at emesis by the administration of alum, ipecac, zinc sulphate, etc.

Hemorrhage must of course be stopped at once; crushed

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limbs rarely bleed from the large vessels, but often there is a considerable amount of general oozing which is serious in such a condition as this. Very hot bichloride solution, and afterwards firm bandaging, is the most satisfactory. Where a mass of muscle projects from the end of a crushed stump and persists in oozing, it may be ligatured and cut away. If there has been severe hemorrhage, fluid nourishment in small and oft repeated doses should be administered with the stimulant.

If there has been excessive hemorrhage, infusion of saline solution should be performed, the extremities in the meantime being raised and bandaged so as to impel as much blood as possible to the nerve centers and imperfectly distended heart. Electricity has in some cases been useful.

Remember that collapse in some cases of internal hemorrhage is useful by giving time for nature to close the bleeding vessels. In such cases the treatment had better be limited to horizontal posture, strict quiet, external warmth, and such action as the bleeding may demand. When reaction has commenced, food must be given, e. g., small quantities, frequently repeated, of brandy and egg mixture, milk, and strong soup.

The second indication is to moderate the resulting inflammation. To do this much may be accomplished in the way of prevention, by letting on the reaction gradually; avoiding on the one hand the undue use of stimulants, and on the other cautiously interposing antiphlogistics as occasion may arise for their exhibition. As the secretions are commonly materially deranged in all cases of severe shock, early and effectual means should be adopted for their correction and improvement; a gentle mercurial purge will often admirably fulfill the indication. The diet of the first few days should consist mainly of animal broths, etc., and cautiously followed by food of a solid and more substantial character.

Anodynes are always borne well after severe shock, and

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should be administered early and freely to allay vascular action and tranquilize the nervous system.

After the immediate effects of the shock have entirely passed away, we must adopt means to prevent the remote consequences. With this view, complete rest of body and repose of mind must be enjoined; all business must be laid aside; the patient's diet and habits of life should be carefully regulated, over-stimulation being especially avoided ; bowels kept freely open; and his general health attended to on ordinary medical principles.

A question of considerable importance frequently occurs in these cases, viz : whether an operation should be performed during the continuance of shock. I think it depends entirely upon the kind and extent of the injury. So far as primary amputations are concerned, I think that the best course to pursue is to stop the hemorrhage, prevent decomposition by wrapping the limb in a strong solution of mercuric bichloride (1:500), and leave it, not until reaction is beginning, but until it has thoroughly set in, as the additional injury inflicted by the operation would increase the depression under which the patient is suffering. In some cases, however, the presence of a crushed limb appears to prolong the shock, and prevent the patient from rallying, notwithstanding the administration of stimulants; and again it is necessary to perform an operation at once, such as opening the abdomen, for the arrest of hemorrhage. In these circumstances the surgeon would be justified in operating before reaction comes on. Here the administration of ether is extremely beneficial ; it exercises a sustaining influence, not only by acting as a stimulant to the nervous system, but by preventing the pain and dread of the operation from still further depressing the vital energies.

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DISCUSSION OF DR. CONNERY'S PAPER.

THE CHAIRMAN: The paper of Dr. Connery certainly represents a great deal of thought in picturing various styles of shock.

DR. E. B. SMITH, Detroit: The paper, of course, covers the ground so thoroughly that there is little to pick up along the line of thought, excepting this one thing I thought of which I did not hear the doctor mention. Sometimes in these cases the shock is prolonged by an irritant of some form along the line of some of the nerves. I have seen several cases of railroad accident where pieces of bone or spiculae lay against the track of some of the principal nerves. When these were removed, the pressure being taken off the nerve, the patient rallied very quickly.

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SIMPLE EXTRACTION OF CATARACT. DEDUCTIONS BASED UPON A SERIES OF ONE HUNDRED OPERATIONS.

EUGENE SMITH, M. D.
Detroit.

It is not my intention to burden you with statistics or reports of individual cases, but rather to ask your attention to some deductions drawn from an experience of over one hundred operations for cataract, made by the method called simple extraction, i. e., by the classical flap extraction.

A story has been told of a great sculptor, to whom it was said that he made no progress with a statue. He replied that he altered this fold of drapery, that he retouched that outline, and so forth. It was observed that all these alterations were trifles, and he answered that the aggregate of such trifles constituted perfection, and that perfection is no trifle.

Most operators agree with regard to the main principles on which operations for cataract should be conducted, and that further progress must be in the line of improvement in details.

As a result of greater cleanliness and antisepsis, suppuration of the cornea has become very rare. It is, in fact, no more frequent in the simple than in the combined method, and may be more easily checked, with better chances for useful vision. A beginning suppuration of the cornea in a case in which an iridectomy has been done, is nearly certain to be followed by the penetration of germs into the eye, and a consequent panophthalmitis, the cut iris affording a most excellent intraocular nidus for them; whereas, if an iridec-

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tomy has not been made, the iris, lying against the corneal wound, acts as a barrier against their entrance, and the chances of checking the suppuration of the cornea are much better, as I have seen in two cases.

With all operators who have adopted the simple method of operating for cataract I agree that excision of the iris should not be abandoned in all cases, in fact, it can not and should not be omitted in certain cases.

What are the cases in which iridectomy is indispensable?

1. When the iris falls upon the knife during incision of the cornea. 2. In adhesions of the iris to the lens. 3. Where the flap is too small, the lense being large and seemingly immovable. 4. When there are evidences of a glaucomatous condition. 5. When the pupil is small and not active. In all other cases of fully developed cataract, I look upon an iridectomy as an unnecessary mutilation of the eye, and my opinion is based upon an experience of nearly thirty years. I also take issue with those who practice and teach that the technique of the operation is more difficult than in the combined method. For more than twenty years I practised the latter operation, and in several hundred cases, and I still make it when I deem it necessary; yet I do not hesitate to say that the simple extraction, as its name implies, is the easiest and most simple to make on the part of the surgeon and decidedly so on the part of the patient.

Much of the credit for the return to the classical flap extraction is due to the greater control of our patients which the use of cocaine affords by its anæsthetic effect, and the increased surety against infection which the use of an antiseptic gives us, used with a view to asepsis. The lessons learned by my experience in more than a hundred extractions by the simple method will cause me to continue to make it, and to advise others to make it as *the* operation for cataract.

Preparatory treatment of patient:—For a week or ten days before the operation I have a solution of hydrag. bichloride 1 to 10,000, or a saturated solution of boracic acid, dropped

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into the conjunctival sac freely twice or thrice a day. In some cases the bichloride solution produces marked irritation. When such is the case I use the boracic acid. I suggest to the patient when washing his face to be sure and wash well the eyelids. The instruments are washed in hot water, then dipped in absolute alcohol, and then again in hot water.

Technique of the operation :—I drop a few drops of a four per cent. solution of cocaine, fresh made, into the conjunctival sac, and after a few minutes evert the lids and very thoroughly wash the conjunctiva of the retro-tarsal folds as well as that of the everted lids, and very particularly the edges of the lids, with a 1 to 5,000 solution of corrosive sublimate. A few drops more of the cocaine, and in two or three minutes the patient is ready for operation. I use the speculum during the entire operation. I always practice the upper section, taking a trifle less than the upper half of the clear cornea, the puncture and counter puncture being made a trifle above the horizontal meridian, the whole section being made in the clear corneal tissue just forward of the limbus. The section is made with a Graefe's knife, and, when finished, I introduce my cystitome forceps and remove the anterior capsule. I prefer this method of dealing with the capsule, as in my experience it has so far done away with all secondary operations on the capsule, so frequent after ordinary incision with the common cystitome. In not a single instance have I been obliged to make decision of the capsule, and in no case have I failed to extract the capsule. In one case of thickened capsule the forceps delivered the lens in its capsule without loss of vitreous.

The manner of expelling the lens is important, particularly to one who has been practicing the "Schlitten manœuver" of Von Graefe in the combined method. The lens cannot be delivered in this manner; the pressure must be made through the cornea, upon the lower border of the lens, in such a way as to tilt its upper edge forward toward the pupil. As the

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lens, pushing the iris before it, engages in the wound, a gentle sliding upward of the rubber or tortoise shell spoon over the cornea will expel it. The spoon should not come in contact with the wound. Gentle stroking of the cornea with the spoon will usually expel the remains of the cortex if it has not entirely escaped with the cataract. I do not object to cortical remains within reasonable limits. I am well aware that their presence tends to produce iritic irritation, but this very irritation tends to cause contraction of the pupil and prevent prolapse. I have never experienced a severe iritis set up by its presence, and I believe there is more danger from prolonged attempts to get it out than from its presence. I believe, also, that there is more danger of severe iritis from bruising of the iris during delivery of the lens through too small a section, than from debris remaining after delivery.

After delivery of the lens, if the iris does not replace itself, but remains prolapsed, I replace it with a small spatula, and drop two or three drops of a solution of eserine, one grain to the ounce, into the conjunctival sac, remove the speculum, and wait five or ten minutes before bandaging to inspect the eye and see if there is still a tendency to prolapse on the part of the iris; if so, I again replace with the spatula and give a hypodermic injection of one-eighth of a grain of morphia. After waiting a few moments I apply a dressing of absorbent cotton, and hold it in place with strips of adhesive plaster extending diagonally from forehead to cheek. This dressing does not become displaced as does the old-time flannel bandage, and is much pleasanter for the patient. After having tried other ways I prefer, particularly in old people, to have them in bed when I operate, and if not burdensome to them, I keep them in bed as quiet as possible for three or four days.

The hypodermatic use of morphia, one-eighth grain every three hours until one-half grain is taken, I find very useful. If no pain is complained of, and the dressings remain dry, I do not examine the eye for two or three days. At this time I

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simply renew the dressings, if the eyelids appear normal; if, however, they are somewhat œdematous, I examine the wound.

In the Archives of Ophthalmology, 1894, No. 1, I published a paper, entitled, "Cataract; Morphine Hypodermatically as a Means to Prevent Prolapse of the Iris in Simple Extraction," from which I quote:

"After the toilet of the lens, I drop a one grain solution of eserine (salicylate of physostigmine) in the conjunctival sac, give a *hypodermic injection of one-quarter grain of morphia sulphate*, wait a few minutes, then let the patients go to bed, where I like to keep them from twenty-four hours to two days. Eight hours after the first hypodermic injection of morphia I give another, and the following morning a third. This generally keeps the pupil contracted *ad maximum* from thirty-six to forty-eight or more hours.

The morphine injection also relieves the discomfort immediately following the operation, produces tranquility, checks a cough if present, and does away with involuntary traction of the recti or orbicularis muscles. Given hypodermatically, morphine *does not produce vomiting*. Whether the effect of morphine in producing contraction of the pupil be due to its sedative action upon the sympathetic nervous system, in consequence of which the capillary vessels of the iris become somewhat engorged and the pupil strongly contracted, or whether the contraction be due to a stimulation of the motor-oculi centres, I do not know, but that it seems to fulfill many indications and have a most happy effect I have demonstrated to my own satisfaction in the cases in which I have employed it."

Since the paper was written, over a year and a half ago, I have changed the dosage of morphia, dropping from one-fourth of a grain eight hours apart, to one-eighth grain every three hours till four doses are taken. I have never had reason to regret its use, and I can recommend it highly. *It does not cause vomiting. It does cause contraction of the pupil.*

While my deductions are based on considerably over one hundred cases, the following report is from the first one hundred.

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Loss of vitreous occurred three times; in two cases no complications; in one case glaucoma destroyed the sight in spite of a large iridectomy. Prolapse of the iris occurred five times; the prolapse was removed the third day, and they all resulted well but one, the glaucoma case above spoken of. (See note.) Anterior synechia, possibly slight incarceration of iris, happened in four cases; healing of wound was smooth and results good, a slight drawing up of the pupil only being noticed; the movements of pupil were active and apparently not interfered with.

Six cases of posterior synechia, or adhesion of iris to capsule, were noted, but in none were the symptoms of any intensity, and I have no doubt more of these cases occurred but escaped notice. In only one case did total loss occur—the above mentioned glaucoma. It was one of my earlier cases, and I failed to note the glaucomatous tendency so easily observable in the other eye at present. One other case must be rated as a loss, although an iridectomy will no doubt give useful vision. It was the only case of the kind I have ever had, viz.: *acute mania* following the operation. It was a hospital case, and when I saw her twenty-four hours after the operation I was told that the maniacal attack occurred one and one-half hours after the operation. She required several nurses to hold her in spite of morphia subcutaneously; the attack lasted a couple of hours, during which the dressings had been torn from the eye several times. I removed the dressings, opened the eye, and found *an opaque flap (upper half of cornea) flopping up and down between the lids, it being everted.* Of course the edges of the wound were infiltrated, and I expected sloughing of the cornea. The pupil was strongly contracted. I placed the cornea in its proper position, carefully applied to the edges of the wound of the cornea a solution of mercuric bichloride, one to one thousand, rubbing it in with a bit of cotton on a probe. The suppuration was checked, cornea healed nicely, anterior chamber reestablished, but closure of pupil existed, which, as the perception of light

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is good, can be remedied by an iridectomy. A peculiar accident happened in one case. While introducing the cystitome forceps, without steadying the eye with fixation forceps, the patient rolled the eye suddenly upwards, and the forceps became entangled in the iris below the pupil, and before I could release them a rolling downward on the part of the patient, as sudden and unexpected as the first motion, caused a peripheral separation of the iris for one-third of its diameter. I excised the detached portion, and proceeded as if nothing had happened. Notwithstanding the rather free hemorrhage which followed the accident, a fair result, $V = \frac{1}{10}$, resulted. I have seen the same accident associated with the use of the ordinary cystitome.

The dressings are usually removed in ten days or two weeks from both eyes, the eye not operated on being uncovered the third or fourth day. Atropine may be used the third or fourth day. Sometimes I use it and many times not.

The visual acuteness is perhaps a trifle better than when an iridectomy is made, when the test is made indoors, but is decidedly better in a majority of cases when made out of doors in a bright light.

The complications above mentioned are as few in number, or fewer, than by the combined method, and I think, upon the whole, speak strongly in favor of the simple extraction. It must not be forgotten that all of the accidents above mentioned, except that in the acute mania case, may and do occur, I think, as frequently, if not more so, in the combined method as in the simple.

NOTE.—This case did well with central pupil until sixth day when, during sleep, probably from injury, the wound opened and prolapse occurred. I made a large iridectomy, and for several weeks patient did well, calling occasionally at my office, when I discovered the glaucomatous tendency. I told him to see me every day, but as he was seeing to walk around, he neglected to visit me for about two weeks, when I found + T 3, and sight disappearing. He became totally blind. The fellow eye now shows glaucomatous symptoms, and is, of course, a proper case for iridectomy.

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DISCUSSION OF DR. SMITH'S PAPER.

Dr. Geo. E. Frothingham, Detroit: I am very much interested in the paper which has just been read, and I think the results in these cases reported by Dr. Smith are very creditable. If I were inclined to perform simple extraction, I should adopt the method which Dr. Smith has the credit of introducing, of using morphine hypodermically. I think it is the most effective way of maintaining contraction of the pupil, and of maintaining that perfect quiet on the part of the patient which is necessary for the success of simple extraction. It is necessary in these cases that the wound should heal as perfectly and as quickly as possible, in order to prevent the great danger of that method of extraction—prolapse of the iris. When I commenced the extraction of cataract, Von Graefe's method had already been introduced, and it was generally adopted. Owing to the prestige of his name it was very quickly accepted by ophthalmologists the world over. His incision was very peripheral, and already some cases of sympathetic ophthalmia had resulted from carrying the wound so near the ciliary body; for it is a settled principle in ophthalmia practice that the nearness of the wound to the ciliary body, however clean-cut your incision, is the great source of danger. All recognize that, for it is no longer a matter of dispute. Owing to that danger I commenced with the old flap extraction with Beer's knife. I knew of but one operator in this country who continued that method, and that was Dr. Roosa, of New York. For the same reason or consideration he had continued that method of extraction. I was fortunate in my first cases, and the result of some of them put to shame the best work I can do today, resulting in a central pupil, perfectly movable, the eye showing no sign of the operation except the deep anterior chamber and tremulous

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iris; and with perfect vision. There is no mistake about the fact that in the successful cases it is the ideal operation.

But the principle upon which Von Graefe established his operation was not the most perfect result for the few, or for the considerable number, but sufficient sight for the greatest number. And on that principle I must say that I think we must adhere to Von Graefe's method, modified as it is at the present day, carrying the incision somewhat further forward. We must adhere to it on the principle of greatest safety, and to give sufficient sight to the greatest number.

Now the good operator may get fine results by almost any method. If Dr. Smith were not present I should say he is a good operator, and can make a success with simple extraction where others might fail. Dr. Knapp has reported the finest series ever reported, I think—one hundred cases by simple extraction with only one failure—and he is as earnest an advocate now of simple extraction as he was at one time of Von Graefe's method, which he did so much to introduce to the acceptance of American opthalmologists.

I early adopted the simple extraction. Liebreicht in 1873 had devised an operation very similar, with a narrow knife.

Anyone who has used Beer's knife knows that to make a perfect incision requires a good deal of practice, and very skillful manipulation. He had introduced the method of making the incision with a very narrow knife, making it downward, carrying the apex of the flap nearly two millimeters above the limbus, and he published it to the world as an improved operation, as safe as the modified linear, as easy as couching, and as perfect as the flap operation. These were the three advantages he claimed for it. He suggested that the operation might be made upwards, but had never so performed it. I studied the different operations presented at that time, and modified Liebreicht's somewhat, making an incision upward witn a narrow knife, and carrying the apex of the incision to a point just inside of the margin of the clear cornea. I reported that operation to this State Society in

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1874. I believe I was the first to publish the method known as simple extraction. That paper is published in the transactions of this society for that year.

But I felt compelled to abandon this operation. I had made about as immodest a claim concerning it as Liebreicht did in regard to his method, that it was easy of execution, and that it was safe and perfect in its results. But I soon found difficulties. There are cases that you cannot diagnose beforehand where the escape of the lens is difficult, where the nucleus is larger and harder, and you must resort to an iridectomy, to allow of the escape of the lens without a prolonged manipulation. Then again, the incision must be carried further forward than in Von Graefe's extraction. In the latter operation, in which an iridectomy is performed, there is no obstruction in the way ; you can apply the pressure below, and slide the lens upward without pressing so much inward, endangering a rupture of the zonula of Zinn and escape of the vitreous humor. But in simple extraction you cannot do this. You must, as Dr. Smith has said, tilt it forward. You must have a larger incision, and you will find greater difficulty in evacuating the lens without using a traction instrument in these cases. I found I had to perform iridectomy in a considerable per cent. of the cases operated upon by the simple extraction which I devised.

Then there are other difficulties. We cannot so often evacuate all the lens matter perfectly. There are portions that, without the results of prolonged manipulation and waiting for the softening effect of the aqueous, remain behind the iris, and when we remove the dressing to inspect the eye we shall find these remaining portions blocking up the pupil, and to a certain extent endangering the eye.

I think, as Dr. Smith does, that with our improved methods of operating, we need not consider so much the danger of suppuration. With antisepsis, with early attention to the condition of the wound, suppuration of the cornea now very rarely occurs. I cannot state the per cent., but I would not

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state it to be above one per cent. in ordinary practice. So that of this there is comparatively small danger.

The greatest danger of this method of operating, the great danger of simple extraction, is prolapse of the iris, which no use of a myotic, not even when aided by the hypodermic injection of morphine, can surely guard against. This is acknowledged by all operators; and Dr. Knapp, in his last report of cases—six hundred and thirty cases, I think, of which five hundred and forty-eight were made by the simple extraction—reported to the International Congress at Edinburgh last year, says you must face ten per cent. of prolapse. Now Dr. Knapp is an experienced and skilled operator, and he reports in that series of five hundred and forty-eight cases, fifty-five instances, or ten and two-tenths per cent. of prolapse of the iris. Now let us see what result he gets. Fourteen of the cases required subsequent operations for the prolapsed iris.

To anyone who has engaged in ophthalmic practice I need not spend a minute in speaking of the great danger of prolapse of the iris. We all know it. It must be dealt with very early, or it must be left very late. It leads to a bulging and yielding cicatrix, and if it retains the humors of the eye, it drags upon the ciliary body. It is a source of the greatest danger; and Dr. Knapp reported that out of these fifty-five cases of prolapse two lost not only the operated eye but the other, through sympathy. Two cases of prolapse out of the fifty-five lost not only the eye operated upon, but all hope of restoration of the sight from any subsequent operation upon the other eye.

Now this is the danger which has deterred me, and I cannot bring myself to return again to that simple operation; and most of those who have performed it are of the same opinion. Dr. Landolt, of Paris, in 1892 published an extended article on this operation. He communicated by letter with all the great operators of Europe. I remember one sentence, I think from Von Stellwag's reply, as reported in his article: "I dis-

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carded simple extraction for a reason that has never been removed, and I have never felt inclined to return to it."

Pagenstecher, in an article which was published last year, advised the young ophthalmologist against the adoption of simple extraction; and said: "Eight or ten per cent. of prolapse is too dear a price to pay for a few round, central pupils."

Now I think he voices the sentiment of the largest number of conservative ophthalmologists; and there is, as far as I have observed, a disposition to return to Von Graefe's operation. Dr. Smith has no inclination to that as yet; and while he can go on and make as good results as he reports, by simple extraction, he has no occasion to do so, from his own experience. My experience has been different. The average experience, I think, has been different. So I think I may safely say the tendency is to return to the operation of iridectomy in the majority of cases, and only in a few well selected cases to perform the simple extraction, admitting all that is claimed by those who make simple extraction, and acknowledging that when successful the result is the ideal and perfect one. I remember seeing a case that Dr. Smith showed me, upon which he had performed a simple extraction, in which, if all the ophthalmologists in the world had been present, they could not have suggested a single particular in which the result might have been better or more perfect. But we are to look to our chances of success, our chances of accomplishing the result for which we operate, which is not simply the chance of giving a few perfect eyes, but of obtaining sufficient sight for the greatest number. On that principal I still adhere to Von Graefe's operation, modified as it is at the present time, and shall do so until I get further evidence of the superiority and greater safety of simple extraction.

Dr. Carrow: The gentleman who has just read the paper would perhaps naturally expect to hear from Dr. Frothingham and myself very much in the same tune on this subject; and after we have said all that can be said on the matter, we have

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not said anything which is at all new, at least new to ophthalmologists. All these matters have been gone over again and again, till we almost know them by heart. Still, I cannot allow Dr. Smith's paper to go altogether unchallenged, from the fact that there are some in this room who do not do cataract extraction as often as Dr. Smith and some of the rest of us, and until they have done cataract extraction a great number of times, they have not sufficient manual dexterity in doing the operation to warrant them in accepting his advice altogether and without dissent.

Now it does require a nicer manœuver in handling the iris with the simple extraction than it does when an iridectomy is made. The replacing of the prolapsed iris, which occurs in so many cases, requires the nicest sort of handling. Then, too, I wish to emphasize one particular point upon which Dr. Frothingham spoke, and that is about the remains of some soft, cortical substance or debris which in many cases, especially in cataracts which have degenerated a little bit, are a source of danger. That part of the lens substance which remains in the eye is perhaps so clear at the time of the operation that we do not discover it until we open the eye three or four days subsequent to the operation, and find the pupil filled with this opaque mass. Now it is well known that there is no one thing, after the cataract has been removed, which is so productive of iritis as this lens substance which is left behind; and I dare say you cannot get from an eye the iris of which is left intact, with a small central pupil, which we always get when the aqueous is liberated—we cannot get a thorough emptying of the anterior chamber of this soft lens substance nearly so well in the simple as in the combined method.

Again, from doing a large number of these operations, I am convinced that a clean, clear-cut incision of the iris tissue is not nearly so liable to provoke iritis as a bruising and stretching of the sphincter muscle. In the operation where the iris is left intact, you have got to so manipulate and tilt

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the lens—the bottom of the lens, as Dr. Smith suggested—making it appear in the pupil in order to deliver it, you have got to use sufficient force to distend and stretch the pupil itself, and the tissues of the iris, and that stretching seems to me to be very likely to act very much as is the case in a railroad accident, where a man's limb is run over, where there is a crushing and confusion and mangling of all the tissues. In that case the consequent shock and danger to life is very much greater than would occur if the leg had been taken off by a clean, clear cut incision. So that I think I am willing, in the present method of operating for cataract, to run the risk of wounding the iris with my sharp iris scissors, rather than to stretch and tear those delicate tissues in making the larger body traverse the smaller space, that is, in delivering the lens through the smooth pupil. Dr. Smith has become so expert in the doing of this that he can well afford to do this operation without the iridectomy. There are some of the rest of us who cannot afford to do this same thing; and as Dr. Frothingham has so well expressed it, so I take the liberty of saying to those who do not operate very often, that they are certainly treading on safer ground when they make an iridectomy than when they attempt to leave the iris intact. If there is a resulting iritis, then there is not so much danger of a plugging up of the pupil by deposits of lymph which become organized, and which are exceedingly tough in a great many cases, and always require a secondary operation.

Now our opinions are pretty well known on these subjects. It is unnecessary to recall the advice of Pagenstecher, to which Dr. Frothingham has referred; nor is it necessary to say that I can count a dozen of the principal operators, especially on the Continent, who, having laid aside Von Graefe's method to take up simple extraction, have now in their turn discarded it, and gone back to cataract extraction with the iridectomy.

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DR. A. E. BULSON, Jackson: I was very much interested in Dr. Smith's paper, and in the number of successful operations which he has reported. The essential features of the preparatory process I practice myself. When it comes to the separation of the capsule without performing an iridectomy, I feel, as Dr. Carrow has said, that it requires an expert hand to perform the operation of extracting the lens without some accident following. It was my privilege to follow Dr. Knapp for a long time in his clinics, and we know that he has been very enthusiastic in regard to the simple extraction. It was also my privilege to follow Dr. Noyes in his clinics for a time; and I know that it is with great reluctance that he operates by the simple method. Prof. Noyes is also very particular in his advice to his pupils regarding this operation, *i. e.* simple extraction, and says it must be done with great discretion. I believe that there are times when we can extract a cataract with great facility without an iridectomy, but that must be determined at the time of the operation. I think a good deal as old Prof. Bedford used to say, in cases of obstetrics, "We may have a dilated or a dilatable os uteri." I also say in regard to the iris, after I have performed my section of the cornea I decide immediately whether it will be safe for me to extract the lens without iridectomy. We may have a rigid iris, and in that case I, for one, am not willing to attempt to extract the lens without an iridectomy. I remember distinctly a case that I operated upon only a short time ago, where I thought I had a dilatable iris; and in tilting the lens down and up, as Dr. Smith has said, after his operation, removing the anterior capsule, the lens suddenly disappeared into the vitreous, and there was quite an escape of this body. Well, of course I, with my spoon, fished it out as rapidly as possible, and I am glad to say that I had a fairly good result in that case. But I believe, as Dr. Frothingham has so ably said, and as Dr. Carrow has emphasized for those who are not, you may say, experts, it is not safe to throw out the impression that this is simple enough. I believe in an iredectomy as

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safer, and, as Dr. Carrow has said, I do not believe that the dangers are enhanced by a clean cut in the iris. We live in the day of aseptic and antiseptic surgery; and if antiseptic surgery is worth anything, it is certainly worth something in this operation. Therefore, from my experience, which is not as extensive as that of some of those here, though I have had quite a number of cases, and am performing operations every little while, for my part I prefer the iridectomy as a rule.

It is said that the round pupil is something to be desired. As Dr. Landolet has said in one of the great gatherings of ophthalmologists in the Old World, "It is enchanting to have a nice, round pupil after a cataract extraction; but it is very disenchanting when you come to open the eye to find a prolapsed iris." Therefore, sir, I believe that the tendency of the profession today is to go back to the Von Graefe operation; and in the reports given by Dr. Knapp, I see that he is advocating that in certain cases. He elects the cases, just as every man must elect the cases as they are presented. In old, senile cataracts, with a large nucleus, I, for one, would not attempt to extract the lens without an iridectomy. I believe that perhaps by the most delicate manipulation in the hands of experts who have practiced this hundreds of times, they can succeed; but for me, I prefer the operation with iridectomy as being the safer operation.

Dr. C. H. Baker, Bay City: With all due deference to what has been said by the speakers who have preceded me, I must say that I agree in the main with the author of the paper who has given us his experience, and I will say that I have recently had a case where I am satisfied that the simple extraction saved an eye, in which prolapse of the iris had occurred, where it otherwise would have been lost. It was the case of a woman eighty-nine years old; one of those senile cases that Dr. Bulson has spoken about; a case in which you naturally would elect an iridectomy. This woman had the operation done in the country. She was attended by unskilled people, her physician being a number of miles from her, and

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she being in a more or less childish state of mind. It was impossible to keep the woman quiet, and she would finger her bandages. She would rub her eye and blow her nose hard, and the result was she had a most beautiful prolapse of the iris; but the vitreous was semi-fiuid, and if that iris had been cut at the time of the operation, there is no question in my mind but that I should have had a complete loss of the vitreous, hemorrhage into the eye-ball, and loss of the ball. As it was the iris closing the wound served as a barrier to prevent that accident from happening. The result of the operation was that three or four weeks subsequently I removed this prolapsed iris at the same time that I operated by the same method of simple extraction upon the other eye, and I got no prolapse in the opposite eye, because the people had been very carefully instructed how to handle the patient, and watched her closely. The prolapsed iris healed very kindly, and I got two good eyes, in one case with the prolapse, and in the other without. I have a nice, round pupil on one side, where there was no prolapse, and I have in the other eye of the patient the ordinary keyhole pupil, which we have in the modified operation. This is a case which will stand as a set-off to some of those other cases. As Dr. Frothingham has said, he perhaps introduced this method into this country, but he also neglected to state that it was done at a time when asepsis was not as common as it is to-day, and the results which he obtained at that time would not be duplicated at the present time. In other words, with the same operation, accompanied by asepsis, his results would be far better than they were then.

Now, as has already been said, this operation, done by men who do it frequently, is possibly safer and possibly easier if done with an iridectomy. That is a mooted question yet. I myself think it is not easier. I think it takes just as much skill to pass your iris forceps into the wound, seize the border of the iris and draw it out, excise it and do a proper iridectomy; that it is just as difficult as the simple extraction can

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possibly be. And as regards the removal of the soft lens matter, I have not yet, in my experience, found it any more difficult to clear it out. Theoretically, I agree that there may be more retained in simple extraction than in the other operation ; but in practice I have not yet seen it.

Dr. Knapp has been frequently quoted. He read a paper before the American Medical Association some years ago, in which he reported one thousand cases, and recently he has reported six hundred more, and after having previously reported a large series of cases done by the modified method he has not gone back to it. He says you must use your judgment in selecting what operation you will use in your cases. That is correct. Every man must use his judgment in the handling of all cases. Now as regards the removal of a prolapsed iris, I would take exception to the method of the author of the paper. I should follow Dr. Knapp's method. Dr. Smith removes it on the third day after he detects it. I would leave it, as Dr. Knapp does, until all irritation from the operation of extraction has subsided. It does not set up trouble until long afterward, when the scar contracts. Then is the time to remove it. If you remove it three days after the operation, when the eye is in an irritated condition, you are very liable to set up iritis. Another point arises in regard to the choice of operation, namely, bruising of the iris. I think iritis is much less likely to occur when the iris is not cut, than when it is cut. The effect of simple extraction upon the iris has been compared here to-day to the result of a railroad injury. Now there is no comparison between the two conditions. A railroad injury is a violent injury, and a heavy weight passes over the body. Of course you get, as a result of a railroad injury, a bruising and destruction of tissue; but in this case you have no analogy whatever. You may find the sphincter of the iris contracted, and in that case the method of gently pushing back the iris behind the border of the lens may be carried out. The method of tilting the lens, if properly done, is not at all difficult, and it is easy to de-

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liver the lens through the pupil. As Dr. Knapp describes the tilting of the lens, it should be done by direct pressure toward the center of the eye-ball. Now that is an important feature. If you try to make your pressure in such a direction as to force the lens through the incision, you will crowd your lens under the iris. That is the tendency. If you make your pressure directly downward over the inferior border of the lens, right toward the center of the eye-ball, the counter-pressure of the vitreous will tilt the lens directly into the wound, bring it through the pupil, and make it very easy of delivery. It brings out the soft lens matter almost invariably, and in examining the lens afterward you find very little soft matter remaining.

Then as regards checking suppuration. In case you get suppuration of the cornea, you are less liable to get infection of the eye-ball if the iris is intact than you are if the iris has been cut. If you cut the iris, you have a very close communication between the anterior and posterior chambers, and it is very easy for germs to obtain access to the interior of the ball. But the germs have greater difficulty in obtaining access to the interior of the ball when the iris is not cut. So I say those who regard the modified operation as the easier should perform that operation. Those who believe, and, from experience know, that the simple operation is superior will continue to practice it, and to get good results.

Dr. Leartus Connor, Detroit: This subject is one of general interest, and the paper before us will add to that interest. One thing is notable, which was expressed in the late International Congress at Edinburgh, where were gathered many of the world's leading lights in ophthalmology. They said, after long discussion of cataract operations, "Well, we will go back and do as we have been doing. We have not modified at all our personal equation." Every individual has a personal equation. He has certain classes and conditions of patients. He adapts himself and his instruments to his patients in such a way as to accomplish the best result. And

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I have no question at all that one who follows that line of self-instruction will attain for himself and his patients the very best results.

Dr. Smith has given us a valuable addition to the technique of this operation in his forceps by which he extracts the external part of the capsule. I have waited to see if that method surpassed materially the method of simple incision. I cannot gather from what he says, or from those who operate in the same way, that the retention of the debris of the lens at all increases the inflammatory condition of the interior of the eye; and if so, it is very decidedly in advance. And I suspect that a very considerable element in his excellent results is his skillful use of his capsule forceps. At the time he first reported the use of morphine in these cases I was impressed that it was a rational procedure, and I doubt not that he gets better results from its use than the rest of us would. I am unable to see much, if any, difference as regards infection, whether the iris be cut or not. There is in either case a good deal of wound, and much bruising, so that there is plenty of chance for germs to infect the eye if they get into its interior. So I suspect that infection is neither increased nor diminished by either method of extraction.

Finally, we are left about as we began. Those of us who have been trained in certain ways will go on in about the same fashion. The record of ophthalmologists in their work in this direction, the world over, to which allusion has been made, shows that there is a tendency to revert to an individual selection of cases for particular kinds of operation. In that, Dr. Smith is just like the rest. In this paper he does not claim, as I understand, that every case is suitable for the particular kind of operation that he most recommends, but that he finds a larger number than perhaps the rest of us do suitable for it. Possibly when we have become practically as familiar with its technique as he, we shall be as enthusiastic in its advocacy, and grateful to him for insisting upon it.

I should be very glad if Dr. Smith would give us any facts

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he has bearing upon the relative infection of the eye from the removal of the capsule, and the division of it by the cystitome.

DR. W. F. STRANGWAYS, Flint: There is one point in this paper that has not been brought out in the discussion, but which has struck me in watching other operators, and in the few operations which I have performed myself. It is this: one operator finds it very easy to make an incision in the cornea. He has that peculiar mind and nervous system which enables him to make that incision with ease, but he may not be able to make an iridectomy so easily. For some reason or other he cannot manage the two hands for that little operation so nicely. It is a difficult thing for him to do. Now that operator will succeed in making the simple operation. The next man may be able to do both things nicely, but he has never learned the nice little trick of tilting the lens, and hence he finds it necessary to make an iridectomy, because it is easier than tilting the lens. So I believe the difference of opinion between great operators often lies in the differing nervous or mental construction, preventing one man from doing one part of the operation as well as another. For myself, I find it easy to tilt the lens, but I find it difficult for me to make the corneal incision as neatly and precisely as I have seen other operators do it. I do not know why it is, but in my mental and nervous get up that is my difficult thing. From my experience I have found about equal results, whether I did iridectomy or not; but of course my experience is not large enough to generalize from. I must rely on the experience of the large operators, particularly such as Dr. Smith. I am very much pleased with the paper. I must congratulate the author upon his success in his operations. Apparently there has been a little misunderstanding by those who have discussed it, except Dr. Connor. I think they had the impression that Dr. Smith was discarding iridectomy entirely; but as I understand him, in those cases where he thinks an iridectomy advisable, he performs it.

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DR. BULSON: I should like to ask Dr. Smith whether he uses atropine as preparatory in extraction? I know some operators do that. I know that Dr. Knapp dilates the pupil in certain cases. Dr. Smith did not mention in his paper whether he uses it or not. It has occurred to me that where the pupil is dilated, of course it becomes more rigid, and in that case would stand as a barrier in the extraction of the lens.

Another thing that I wish to say while I am on my feet is in reference to the retention of cortical matter. It is my practice, after the delivery of the lens, to use simply a solution of boracic acid to irrigate the eye. In the toilet of the eye depends largely the success of the operation. I remember a case that I operated on about two months ago, where I thought I had a perfectly clear pupil, but, as has been said, it was defective in that regard. After about five days, on removing the dressing, I found that there was a considerable amount of cortical matter that remained. I am glad to say that it did not interfere with the success of the operation.

DR. SMITH: Of course it did not.

DR. BULSON: But I believe it best, if possible, to remove the barriers to its free delivery by an iridectomy.

DR. SMITH: I shall not take up much time in my concluding remarks. It amuses me to find, what we all know so well, in the practice of medicine, not alone ophthalmology but everything else, that we get into ruts, and when we old men get into ruts it is a hard matter to get us out. My object in bringing the paper before the association was to tell the younger men in the association and in the profession that the simple operation is the simplest to perform, the easiest. They can do it as well as any body. They can do it as well as I can, after they have done it once or twice. Iridectomy in itself, per se, is a more difficult operation than the extraction of cataract without iridectomy.

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There seems to be a misunderstanding with regard to tilting the lens. We talk about tilting it through the pupil. If you tilt that lens through the pupil in its normal position, you would absolutely have to tilt it from the vertical to the horizontal position, which is a myth. The wound in the cornea is not to exceed a millimeter in front of the periphery of the lens, and all that is necessary is to press slightly, as remarked by Dr. Baker, to press gently backward upon the lower periphery of the lens, and the upper periphery comes into contact with the wound. It does not come down to the pupil. It pushes the iris up, and comes out of the wound and the pupil at the same time. It is a mistake to think it has to go through the pupil into the anterior chamber before it can retilt back and come up through the wound. It is not necessary. All that is necessary is the gentle backward pressure of the lower periphery of the lens, to tilt it slightly, and then a very gentle sliding movement, and up it comes, pushing the iris before it.

As to Dr. Landoldt, I know him probably better than any man in this room, and I know, as well as others do, that Landoldt is theoretically a most elegant man. Practically, in cataract extraction, like a good many others, his confreres in Paris laugh at him. He makes an iridectomy the size of his wound. He takes out the entire upper third at least of the iris, when every other operator almost in the world, who practices the old combined method, has always endeavored to make the iridectomy as small as possible. Now I contend that there are just as many cases of prolapse of the iris—I will not say prolapse, because that is almost impossible: let me say incarceration of the edges of the iris in the wound,—in the combined method as in the simple method. I have gone over the clinics of my friends who make the combined method, and I have pointed out in five or six cases its existence—this very incarceration of the iris in the edges of the wound. I contend that there are absolutely more cases on record of iritis after the combined operation than have arisen from simple extraction.

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A MEMBER: In the same number of cases?

DR. SMITH: In the same number of cases. I will warrant you that in the same number of cases there are just as many cases of adherence of the iris.

Dr. Frothingham being the first operator to use this method, we must not forget, as Dr. Baker has suggested, that he worked under different conditions than those which exist to-day. He himself acknowledges that we do not now get the suppuration of the cornea that used to be the bugbear operators had to fear. We very seldom get it. Iritis we get just as many times in a hundred cases of combined extraction as we do in a hundred cases of simple extraction.

I noted in the paper that a rigidity of the iris of course would call for an iridectomy. I do not use atropine until the third or fourth day, and sometimes I do not use it at all. Many times I do not find it necessary.

I have had the same difficulty with regard to finding debris that Dr. Bulson speaks of; when the pupil looked perfectly clear at the time of the operation, on the fourth or fifth day I have found a haziness which indicated some cortical debris. I do not pay any attention to it. I do not care any thing about it. The moment I notice any degree of iritis, the third or fourth day—it will not produce irritation until four or five days have elapsed—the third day I use atropine, under such circumstances; not sooner. In many cases I do not use it at all.

I do not find it necessary to dilate the pupil in order to get the lens out. In reply to the question asked me, we get as many cases of adherance from the use of the old fashioned cystitome, as we do from taking out the anterior capsule. The only object in taking out the anterior capsule is to do away with subsequent operations. One of the first cases of necrosis of the cornea I ever had was after an operation for cataract, which was followed by the patient recovering and having fair vision. Some months afterward I attempted to make the vision better by the ordinary decision of the capsule. The result was loss of the eye. That has happened to Dr.

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Knapp a number of times. So that the mere use of the needle or small knife to make a decision of the capsule is in itself more or less dangerous. As I said in my paper, it has been a surprise to me, I have had as yet no necessity for decision of the capsule, simply because I have taken it out with the forceps.

Mention has been made of prolapse of the vitreous. It is less frequent, and when it exists, less dangerous, where the iris has not been removed, because it prevents escape of the vitreous, just exactly the same as it prevents the entrance of germs.

Another point. By this means we never get, nor can we get what so frequently happens—and I speak advisedly—where an iridectomy is made. In pushing back the torn capsule after the exit of the lens, it may happen that the tissues of the capsule become attached in the wound, and the result is, in the course of months, an iritis and loss of the eye. I have seen the pupil close, after a good sized iridectomy, from iritis, a thing I never yet have seen in my practice with the simple method, and which I hope I may never see. And I want—not my old friends, for I do not expect them to get out of the ruts; that is out of the question—but I want my young friends to try this operation of simple extraction; and they will find, after they have done it two or three times, that they can do it just as well as I can. It does not take any more backbone and stamina to do it than to do the combined operation; and there is no reason in the world why they cannot do it just as well as Dr. Carrow or Dr. Frothingham. And when I hear my old friends talking about it being so difficult, I rather suspect that it is done for the purpose of keeping others from performing the operation, and to make them send their cases to us. But at the same time the younger men can operate on eyes, and can make the simple operation with greater ease and less danger, or just as little danger—I will not say less—as they can by the combined operation.

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SELECTED CASES OF RAILWAY SURGERY.

F. B. TIBBALS, M. D.
Detroit.

I venture to report a few cases of railway surgery, trusting that the cases chosen may prove of clinical interest.

Notwithstanding that the present surgical craze is for abdominal work, I maintain that there is no branch of surgery which presents more puzzling problems, and gives better opportunity for conservative skill, than railway surgery.

Inasmuch as a considerable experience in this particular line of surgery comes to but comparatively few men, surgeons who are in emergency called upon to handle these cases sometimes fail to properly estimate the gravity of the injury.

It is an undoubted fact that railway injuries are usually more serious than is at first apparent.

The tremendous traumatism often destroys tissue subcutaneously, and interferes with the blood and nerve supply some distance beyond the site of injury.

Fractures often fail to unite because the very life is crushed out of the bone itself, and dislocations may result in more or less permanent disability of the joint because of the concomitant nerve injury.

CASE I.—One of the most remarkable triumphs of conservative surgery on record, that of Miss Josie H., injured in that frightful rear end collision at Jackson, October 13, 1893.

Her injuries comprised, besides many cuts and bruises, a fracture of the right humerus, and compound comminuted fractures of both ankles.

On the left side the fibula was comminuted, and dislocated

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upwards through the open wound, the ankle joint laid open, and the tarsal bones crushed into shapeless fragments. The right leg was in much the same condition, except that the tibia instead of the fibula was the seat of a compound comminuted fracture three inches above the ankle, the whole lower end protruding through, laying the ankle joint freely open.

Despite her terrible injuries and the profound nervous shock of such an accident, her condition was exceedingly good, and I, as surgeon in charge until the arrival of Dr. Donald Maclean, the surgeon-in-chief, did not hesitate to countermand the amputation of the right leg arranged by the local corps of physicians, believing that conservative surgery should at least have a chance.

On Dr. Maclean's arrival that evening we made a most careful examination of both legs, and decided to defer interference until the development of some indication positively demanding it, realizing fully the grave responsibility of this decision.

Within a few days the skin and superficial tissues, down to the muscles, sloughed from the back of each leg, so severe had been the trausmatism, leaving a raw, absorbing surface on each member of at least four and a half by six inches.

About ten days after the injury I removed her to Detroit, where, under the general supervision of Dr. Maclean, she waged a brave battle for her life. The large raw surfaces absorbed septic matter in spite of the most rigid antiseptic precautions, and the crushed ankles gave constant pain, necessitating the use of considerable doses of morphia.

No attempt was made to reduce the dislocations or fractures of the legs for two or three weeks, that is, until the first violent inflamatory effects of the injury had subsided. When, however, nature began to recover from the severe trausmatism and shock, and evidences of a tendency toward healing could be detected, we removed the dislocated comminuted fibula and tibia, some three inches of each, with a

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chain saw, gently removing also such fragments of the crushed tarsal bones as were easily reached.

It was then not a difficult task to bring the feet around into good position, and subsequent care was taken to maintain such position by light splints, bandaging, and by gentle moulding and manipulation of the parts.

The crushed tarsal bones of both ankles, and particularly the left, continued to give trouble for a long time, and we were obliged at intervals to open the foot, take out necrosed fragments, and let out pus. Indeed, it seemed as if every particle of the left tarsus must have been removed.

Eleven months after injury the patient went to her home at Elmira, N. Y., with the sloughs all cicatrized over, and new bone replacing the exsected tibia and fibula, even the tarsal arch of the left foot seemingly having been reproduced. Since going home she has had occasional slight pain in left ankle, but is in splendid physical condition, and now walks on both feet unaided by cane or crutch, with nearly normal mobility of each ankle joint.

The one thing which more than everything else retarded her recovery was the profound shock to the nervous system, a condition often associated with severe railroad injuries. She was gradually, though with some difficulty, weaned from her morphia, but insomnia was most persistent, and the whole list of hypnotics tried and found wanting.

At last I resorted to the free use of alcoholic stimulants, in some of the seductive mixtures with which I presume you are all familiar, giving in the evening q. s. until asleep, and within two weeks had induced the habit of sound natural sleep at the proper hour.

I have reported this case thus at length because of its gloomy prognosis and happy outcome, and because it exhibits to such a remarkable degree the "vis medicatrix natural" upon which the surgeon must always depend to a considerable extent.

In cases II and III I report two double amputations as further illustrative of the severity of this class of injuries.

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II. Fred S., upwards of seventy years of age, had both legs run over at Bay City Junction, Detroit, Dec. 21, '93.

He was almost moribund when placed on the table at Harper Hospital, but as his legs were crushed beyond hope of repair, I amputated both at upper third.

To my surprise, he rallied and lived three weeks.

The stump healed by first intention, and death was due to a general atheromatous condition of the blood vessels.

III. Chas. C., rode a bicycle directly in front of an advancing train at Royal Oak, 8 A. M., March 30, '95.

Five hours later, after reaction, I amputated the right thigh at lower third, and the left leg at upper third. He rallied well but later sank, and died the next morning from shock, presumably.

One point which needs emphasis is that amputation in railway injuries should be made high up, since the destruction of tissue and injury to blood supply is always greater than at first appears. I have seen a considerable number of cases where re-amputation was necessary because otherwise good surgeons failed to appreciate this fact.

Three cases of injury about the clavicular region, and I am done:

IV. B. R., caught between drawbars in coupling at Detroit, November 28, 1893. Right clavicle fractured at junction of middle and outer third, with no evidence of internal injuries. Made an apparently good recovery in the usual time, and went to his home in Lenox to recuperate.

Within a short time after reaching home he was taken with sudden, severe hæmoptysis, with frequent recurrent attacks up to the present time. He was a strong, healthy young man at the time of accident, and it is evident that his right lung was injured by the squeeze.

V. John S. was caught between a post and the open door of a slowly moving car at Grand Trunk yards, Detroit, February 2, 1895. When examined soon after by Dr. Maclean and myself, a complete dislocation upwards of acromial end

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of clavicle was found. This dislocation was easily reduced, and retained in position without difficulty by a modified Sayre dressing of adhesive plaster, the elbow being firmly supported by a sling. An excellent result was obtained with, however, some temporary loss of function.

VI. Fred W. was struck by an engine in Grand Trunk yards, Detroit, January 22, 1895, and thrown violently twenty to thirty feet, striking on left shoulder and head. Besides scalp and facial wounds, numerous bruises, and compound fracture of left zygoma, he received a fracture of left coracoid process. I am aware that this injury is extremely rare, and only capable of positive demonstration post-mortem.

Hamilton, in his "Fractures and Dislocations," records ten cases which have been established by dissection, and only three supposed cases which he had seen personally.

In this case there was little displacement, but I was able to distinguish positively crepitus and mobility of the fragment. A Sayre dressing kept the arm quiet, and bony union took place. The patient has not yet, however, regained the full use of his shoulder joint. The rotatory movement is perfect, but he is unable to raise his arm straight up, owing to an atrophy of the deltoid and teres minor muscles, both supplied by the circumflex nerve, which must have been involved in the original injury.

The paralysis is entirely motor, and massage with electricity is producing some effect in redevelopment.

He has resumed his duties as as witchman, and finds himself only slightly handicapped by his inability to raise the arm to the vertical position. I hope that time and "*vis medicatrix naturae*" will eventually restore him full function.

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DISCUSSION OF DR. TIBBALS' PAPER.

THE CHAIRMAN, DR. TAPPEY: I think we ought to congratulate ourselves that we have heard a paper on this class of surgery. Nowadays it is rather the fad to write papers on other surgery, and we do not hear as much of this as we should like to.

DR. MACLEAN. I have been watching to hear the reading of this paper, but I have been engaged in another section for a few minutes, and missed hearing most of the paper.

There are some characteristic peculiarities in railway surgery. I am not quite sure that these characteristics entitle it to be regarded as a special department of surgery. There are certain peculiarities that you always find in railroad surgery, but you sometimes find the same peculiarities in surgery that is not railroad surgery. One of the most important features of railroad surgery that occurs to my mind, as the result of my own experience, is that it is an exceedingly difficult matter to estimate at first sight the real extent of the injury. You see a patient who has been struck by an engine, or run over by a train, and if you were not told what had happened to him, you would think that the injury was comparatively trivial; or, for instance, in the case of injury to the foot, you might think a partial amputation would suffice to meet all the requirements, when a few days time will show that the injury was far more extensive, and the amputation has to be performed over again at a higher point. That is one of the most striking features of railroad surgery as it occurs to me, and I think that the surgeon who undertakes the charge of a railroad case ought to be exceedingly guarded in his prognosis.

And moreover, some very curious things happen in railroad

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surgery. I do not know exactly what cases Dr. Tibbals has reported here. I probably saw some or the most of them; perhaps all of them; but I do not know which ones he has selected. But I say, curious things happen. For example, I recall a case in which a heavily loaded train passed over both legs of a man below the knee. He was carried to the Detroit Sanitarium, and at first sight almost anyone, especially after a statement as to how the injury occurred, would have said "amputate;" but the amputation was delayed, and as a matter of fact that patient recovered with two good, useful legs. Now it seems almost incredible that this should be so. There may have been some peculiarity in the manner in which the injury was inflicted; there may have been something that protected the limbs from the full effect of the injury. I do not know about that. The man did not know. Nobody knows. But there is the fact, that a loaded car passed right over both legs, producing compound comminuted fractures of both legs, and still the patient recovered with two good, useful limbs.

I suppose one of the cases referred to by Dr. Tibbals was the Jackson case, where also the injury was very severe, and very discouraging for conservative surgery: so much so, that gentlemen of good average experience in surgery were preparing to amputate. And while the treatment was long and tedious, and perhaps somewhat painful to the patient—not so very much so, however—still the fact remains that within a few days we have heard of that patient walking without a cane or crutch, and using her two legs. My own impression is, my own recollection now is, that pretty nearly the whole of the tarsus was removed from both feet. The bones were smashed up into fragments; but I suppose the fact is that the periosteal coverings of the bones were preserved, furnishing the source from which new bone could be produced. At all events, the fact is as I have stated. It is, so far as my own experience goes, really an unique case in that respect. On both limbs at least two inches of bone, the tibia on one side

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and the fibula on the other, were removed. A vast extent of skin was destroyed, and the feet crushed, so that if any of the tarsal bones were left, I cannot imagine which. I do not think there was. There may have been some fragments left, but both feet suppurated and discharged, and I passed the bone forceps in and took out bone after bone, fragment after fragment, until, so far as my judgment could direct me, the entire tarsal mass was removed from both feet.

I say these cases ought to be borne in mind for the purpose of impressing the surgeon with the belief that, bad as an injury may appear, urgent and excessive as the risk and the danger is, sometimes conservative surgery may be justifiable. When we undertook to save that patient's feet, we realized fully that our attempt to save her feet might cost her life. That is the trouble with these cases. It does not do to say "We will postpone amputation today, and in a few days, if necessary, we will remove the limb." While, of course, careful aseptic treatment makes that sort of an experiment more justifiable now than it used to be, yet even with the protections of aseptic surgery it is often a dangerous and fatal experiment. Here in this case, of course, where the two limbs of a young lady were involved, the inducement to practice conservative surgery was very great indeed, and my own view about it was that the patient might just about as well be dead as to lose both her legs, and I felt justified, in that case, in running the extra risk to try to save her limbs. That is the question that will come up in these cases, and I say that it is a very difficult and delicate matter for the surgeon to decide, in a railroad case, whether he shall amputate, or try to save the limb. And I think one important lesson that should be learned in connection with these cases reported by Dr. Tibbals is that we ought to be exceedingly cautious how we venture to criticise a professional brother in the exercise of his judgment in a case of this kind. One surgeon will look at it from one standpoint, and another from another, and both be perfectly justifiable. Now, as the result proved, we were

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justified in attempting to save this young lady's limbs. Had the amputation been performed, as it would have been but for Dr. Tibbals' timely intervention, I, for one, should have been the last man to have criticised the surgeons who performed the operation. And in discussing this case here, it being a case which for various reasons has attracted a great deal of attention, and in fact being almost a historic case in the annals of surgery in this state, I wish to put myself on record as saying that the surgeons who proposed to amputate one or both limbs were entirely within the limits of just, and honest, and good surgery. And in saving not only the life but the limbs of the patient, I consider we had one of the greatest pieces of good luck that has ever befallen me as a surgeon. And I have to say in addition to that, that for the result, for the successful management of the case as a whole, I owe a large debt of gratitude to Dr. Tibbals for his assistance in the case; in the first place, for having interfered and prevented the amputation; and in the second place, for helping me in the after treatment of the case, which was long, and tedious, and difficult.

Dr. E. B. Smith: I think Dr. Tibbals is to be congratulated on his paper, and I think we should hear more such papers. I agree with Dr. Maclean when he says or intimates that these injuries should be cared for by railroad surgeons. I recall the case of a little child eight years old, that was run over by a sleigh loaded with two cords of wood. There was a considerable bruising of the limb between the knee and the ankle, also a green stick fracture of the fibula. The gentleman who was called in to attend the case repaired the wounds the same as he would a clean-cut injury. That was not enough in that case. There was hemorrhage from one of the tibial arteries. The wound had to be reopened, the vessel ligated, and dressed about as the doctor describes the dressing in that injury of the ankle joint. In the case of injuries where cars have run over a leg, I think we sometimes try to save too much of the limb. Of course, in injuries to

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the leg we try to save at least that part between the upper and middle third if possible. But it seems to me that even if we have a shorter stump than that, we can get along. Where we have an injury to the condyles of the femur, or the lower third of the femur, it does not seem to me that it amounts to very much if we lose one or two inches more of that part of the femur. It seems to me if we go a little farther up, being sure to get enough integument to surround the stump, and can, by operating at that point, get a pretty good union, it does seem that the sacrifice we make in length we gain far more in the ultimate result of our cases. I had a case where a little boy was run over by a house upon rollers, injuring the foot and ankle. A Homeopathic physician saw it, and saw the foot the next morning, and condemned me for amputating the foot, saying so before the boy's father. Of course I felt very much chagrined. The little boy was twelve or thirteen years old, and the only child of the family. But I told the father, and I told the boy, that part of the posterior tibial artery was injured, and upon dissecting the foot we found that to be the condition. If we had attempted to save the foot, with that injury to the posterior tribial artery, we should have lost the limb, or more of the limb, and we should have been very apt to have lost the child. I agree with Dr. Maclean when he says that he and Dr. Tibbals, in saving that young lady's limbs, achieved one of the greatest successes that could possibly be accomplished in surgery; and that means a great deal, when you say that Dr. Maclean achieved one of the greatest successes that he could have accomplished. As I say, I think we often try to save too much injured tissue, when by taking off more of an injured limb we might obtain good results.

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SOME REFLEXES, AND CASES TO ILLUSTRATE.

J. A. PORTER, M. D.
Brooklyn, Mich.

If some medical Newton would arise, and so generalize that we could always know the anatomical site of the lesion producing the symptoms of which our patients complain, brilliant indeed would our work be, and much more certainly would we bring relief to sufferers.

We have all been long familiar with many reflxe states, both of sensation and motion, such as the knee jerk phenomena, cremasteric contraction, diaphragmatic spasms from irritation of the nasal mucous membrane, pain in the little finger from injury of the ulnar nerve, pains in the head of the penis from stone in the bladder, or certain varieties of prostatitis, etc. But to know with certainty when a group of symptoms, which seem naturally connected with an organ, *are* so connected with it in, so to speak, a short or long circuit, is the great difficulty in making a diagnosis. It seems often impossible of solution.

For instance; it would seem most natural to expect or believe that a headache would arise from some lesion of the brain or nerves of the scalp. Yet it is more frequently connected with a defect in the muscular power of the eye, or in some organic defect of the diopteric apparatus, as in hypermetropia, from shortened axis.

I believe it will be found that as high as seventy-five per cent. of cases of headache are caused by defect of eye power, and about twenty per cent. by functional or organic defect of the stomach or bowels. The remaining five per cent. will be

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connected with some distant organ, as the bowels, womb, etc., except a fraction of one per cent., which small percentage only has the nearer relation of trouble in the brain or scalp.

It would seem more natural to connect an asthma with a lesion of the larynx or bronchi than with a lesion in the nose. Yet the proof is at hand that numerous cases of asthma can be cured only by correction of the trouble found in the nose, or in the removal of a polypus or some hypertrophied tissue. Or what seems still more difficult to comprehend or discover is when asthma is caused by lesion of such distant organs as the uterus or rectum. I have a female patient who has a chronic asthma, which I think could be cured by proper treatment of her nose. Yet, when pregnant she is almost wholly free from her asthma. Can some one tell me if all erectile tissues are under one central, dominant governor? This is suggested by such acts as sneezing when about to indulge in sexual intercourse, accounted for, partly at least, by the engorgement of the mucous membranes covering the turbinated bones in the wall; in the female, a fullness of feeling about the throat, erection of the nipples, etc.

How very improbable it is that when a case of paralysis, say of an arm, presents itself we should think of anything more remote than the motor nerves of such an arm, or its governing center in the cord or the brain. Yet I have known such a case entirely cured by extracting a carious tooth.

How improbable would we think it that a carious tooth in another subject should be the lesion that provoked an epileptoid seizure. Yet I know a case of that sort. So again, I have known an apparently severe lumbago in an old woman instantly and permanently relieved by removing a lower molar, which was loose, but not even sore.

Again, a most persistent cough is found not very infrequently to be caused by some irritation in the auditory meatus, or canal, as a few tickling hairs, or perhaps some dry scales, or impacted cerumen.

Once a little patient was brought into my office for examina-

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tion as to the cause of a chronic cough, which had persisted in spite of many remedies advised by their family physician. A careful examination of the chest failed to show up any abnormal sound that I thought sufficient to account for the child's condition. But an inspection of the nose satisfied me that a trouble of some sort was located in that organ. A head mirror and a pair of long forceps soon brought out a grain of corn from one nostril, where it had been (as the mother informed me afterwards) for six months. Its removal stopped all the "scientific explanations" of the family doctors.

What a strange reflex we often get from a phimosis, and especially if the prepuce is adherent to the glans penis. We probably all recall Sayre's teaching the necessity of examining our male children, in cases of apparent hip joint disease, for tight prepuces. A case was brought to me by the mother, who stated that the child, a boy, was about three years old; that he was in great agony whenever defecating, or when that act was about to occur. I examined him carefully about the anus, but saw nothing wrong. I prescribed cathartics to relieve any constipation there might be, all to no purpose however. I now dilated the anal orifice so as to gain any advantage stretching of the nerves of the anus might give me if it was a case of neuralgia. It was of no use. I now widened my circle of examination, and, coming to the penis, I found an adherent prepuce with phimosis. I dilated the orifice of the prepuce, and, drawing it back, was able to peel it free from the glans down to the corona. It was so thoroughly adherent, it was rather hard to do without a knife. After getting it free to the natural degree, a roll of smegma was then removed, a little vasaline applied, and there was an end of the child's complaining.

Another case brought to me was that of an infant boy about three months old. It had the appearance of an old man—wrinkled, skinny, feeble. It was not considered worth anything except by the mother. It weighed less than when born. It could not, or would not swallow milk, except about two ounces during twenty-four hours. It was bottle fed.

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It would close its mouth on the rubber nipple, and as soon as a little milk came in its mouth it would open its mouth, and shake the nipple out by a to and fro movement of the head, made slowly and yet with a slight jerk. It seemed partially paralyzed about its throat. I passed a small tube into its œsophagus, and gave it some milk in that way. I then had the child stripped, and in my examination I found its prepuce in the same condition as in the last described case. I peeled it free, and gave the same directions to the mother about oiling with vaseline for a few days down to the corona. Next day the child swallowed perfectly; appetite was clamorous. In three weeks the child was of normal size and appearance.

With illustrations I might go on thus, but I cannot give any general law whereby I can locate these lesions from the symptoms. I can as yet only do as a great medical teacher once advised his class. He said: "Disease is a chain of many links—some seen, some unseen. Treat it, therefore, by breaking off as many links as you can see, wherever they may be; then if more appear, break those off also," and you will often cure your patient without knowing the why or wherefore fully. I, therefore, if I cannot find in the action of an organ a correspondence of state with symptoms produced, look the patient all over, so to speak. I am then anxious to remove any abnormal thing I find, if I can, no matter whether it seems to stand in the relation of a cause, remote or near, or not. I, especially in boy babies, will examine the penile organ when I am on a still hunt for causes of marasmus in these subjects. I believe phimosis and adherent prepuce are often overlooked, and distress, and even death, has been the outcome of such neglect or oversight.

To say, then, that a pain or other distress is a reflex does not deprive it of danger. If these cases were all in adults, we would have the matter comfortably explained by the words suggestion, hysteria, and neurasthenia, which terms, like many more, explain only as terms of classification; a sort of catch-all term for odds and ends. "Agnostic doctrines"

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would often be more nearly correct, if I might be allowed that monstrosity.

We seem to be called upon by daily contact with these reflexes to solve the problem of causation, but we have not yet succeeded. It is only by recording a larger and larger number of observations that someone may at last discover such a relation between the cerebro-spinal system and the trophic system, that this and kindred questions will be brought into the light fully. As I have never seen any observation by any author I have read covering the ground of the trophic disturbance caused by adherent prepuces, which I have related, I wished hereby to put the matter on record.

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DISCUSSION OF DR. PORTER'S PAPER.

DR. MACLEAN: I think it would be a pity to allow this paper to pass unnoticed. I think it an exceedingly interesting and valuable paper, from several points of view, especially in reference to reflexes resulting from adherent and elongated prepuce. It may be, perhaps, that I take an exaggerated interest in that matter, from the fact that it is many years since I first advocated the operation of circumcision for reflex affections in little boys. I believe that it is an operation that is not performed nearly as frequently as it ought to be. I have often said that if I had a hundred sons I would circumsise every one of them. I believe the operation to be an exceedingly valuable one. It saves the child from a great many irritating affections. I could give you, from my own personal experience, a long list of cases where boys have been suspected of having hip joint disease, where they have really had epileptiform convulsions, where they have had a great many forms of nervous affection, in which the operation of circumcision has put an end to the whole trouble. I believe we cannot be too enthusiastic in our advocacy of this operation. My attention has been called repeatedly to little boys in the cradle, who, from the time they fell asleep at night, had strong erections lasting for hours. That cannot possibly exist in a child without doing serious damage. That is immediately stopped by the operation of circumcision. I have no doubt that the operation of circumcision originally arose on hygenic principles. I believe that it was the result of observation in the old Egyptian school. I believe it arose in Egypt in pre-historic times, where I think probably the first medical school existed; and Moses, who spent his youth in Egypt, probably got his information in that direction, and, understanding the nature and character of his

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own people, thought that the only way to establish the method was to throw a superstitious or religious air about it. So the operation was established so far as the Jews were concerned. As we all know, it is a religious rite in the Jewish church; but I believe it arose in that way; but whenever it arose, there is no question as to the hygienic value of the operation.

There is another thought which occurs in connection with the doctor's paper. This external condition of phimosis we can see. We can appreciate that as a cause of reflex affections. But we can also imagine that in the internal and mysterious economy and structure of the human body there may be other conditions that we cannot see, that we cannot fathom, that we cannot discover, that still have their effect in producing reflex affections, conditions, which, if we could get at them and remedy them as we can in circumcision, would be of great benefit to our patients. But we cannot. They are obscure, they are undiscoverable, of course; but we can easily imagine how it might be possible for certain erroneous and unfortunate conditions to exist in internal organs and tissues, which would give rise to reflex symptoms, just as the condition of phimosis does. But, at all events, that is a condition which we can appreciate. It is one that we can see, and remedy by a very simple and safe operation.

And one word more as to the technique of the operation. I have done it a great many times, and I have sometimes been foolish enough to apply some kind of a dressing. As a rule I did so at first. Now when I circumcise a little boy I stitch the two layers, the mucous and the integument, together, and I put him in bed with a light cradle over him, and the next day if he wants to get up and run around, let him do so, with his little night shirt on; but I put no dressing around the penis. Stitch the two layers together, and leave it to nature absolutely to do the rest. If you put on a dressing, it becomes saturated with discharge, a little urine and one thing and another, and the first thing you know, you have your patient in agony stripping off the dressing. Use catgut sutures that

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will absorb away, and when you have completed your circumcision you have nothing more to do. Nature will do the rest. If you put on your dressing, I do not care what it is—and I have seen iodoform collodion used—it is an irritating application; but if you put in four or five sutures to stitch the two layers together, and then let the child run around in the room, naked or with a little shirt on, leaving it absolutely free, you do the most merciful thing, and you have done for that child an operation that is more valuable to his physical health, and to his moral character, than if you had bestowed a fortune of a million dollars on him, in my opinion.

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DEAFNESS. WHAT ARE WE DOING TO PREVENT IT?

W. F. STRANGWAYS, M. D.
Flint.

When I received an invitation to take part in the programme for this year I had decided to read a paper on some investigations I am making. But on April 4th a beautiful little girl, an only daughter, was brought to me to have her deafness cured.

She was ten years old, with a good family history, and apparently free from constitutional taint.

Her father, a bright business man, said: "Doctor, we are anxious about our little Mary's deafness, though our family physician has told us not to worry, that at the age of puberty she will grow much better, and that it is better to do nothing more than to keep her in good health. But she is growing worse, so that we have to speak very loudly to make her hear."

In replies to my questions I got the old story, so familiar to you all, that when a baby her hearing was good; but when three years old she caught cold, and her ears gathered, broke, discharged, and healed to go through the same process again and again, especially in the spring and fall, until two years ago she had scarlatina, and since then her ears had discharged continuously.

On examination I found each tympanic membrane perforated, large tonsils, and the nasopharynx filled with adenoids.

As I halted in my examination the anxious mother asked "how long would it take to cure her girl?" and before I replied

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she had read in my face my prognosis, and in an agonizing tone said : "Oh! doctor, you must not say you cannot cure her."

I replied I could help her, but she would be more or less deaf all her life.

Little Mary was her only child, the idol of her life, so it was little wonder the fond mother clasped her to her bosom, and amid her sobs wailed: "Oh! my child, my poor child, must you be deaf forever ?"

The scene was exceedingly painful to me, and made worse by the father's question "Could you have prevented the deafness had you treated her when the trouble began ?"

I did not wish to increase a lifelong sorrow, nor to leave any censure on the family physician; so I gave an evasive answer, though I felt certain the whole trouble could and should have been prevented.

Calling in assistance, little Mary was anæsthetized, and I removed the tonsils and adenoids.

The after treatment ordered was Dobell's solution as a wash for nares and naso-pharynx, inflation of the ears by Politzer's plan, and syrup ferri iodide internally.

In a few days the discharge ceased and the hearing began to improve, and no doubt little Mary will have serviceable hearing, but it will ever be defective, a lifelong affliction that might have been prevented.

Such cases are not rare and may well raise the question : "What are we doing to prevent deafness ?"

For days that mother's wail rang in my ears, and I determined to offer this plea for the more thorough effort to prevent deafness.

I shall not weary you by quoting authorities, or introducing histories, but I shall try to hastily outline what my experience teaches me are the predisposing causes of middle ear deafness, with a hope that I may do what little I can to have these predisposing causes removed before they have caused deafness which too often is beyond our control.

My examination of all cases of deafness coming to me

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includes a careful examination of the nares and naso-pharynx, and I find I can make the following classifications for all patients troubled with middle ear deafness.

First. Children with rhinitis, a moderate amount of adenoids, and recurring earache, but only slight or evanescent deafness.

Second. Children with adenoids, and marked middle ear troubles, as deafness, discharge, etc.

Third. Adults with more or less remains of adenoids, some rhinitis, and slowly increasing deafness.

Fourth. Adults without adenoids, but with a septal exostosis and post nasal catarrh.

Fifth. Adults with rhinitis, naso-pharyngitis, and constantly increasing deafness.

You will notice this classification depends, not upon the state of the ears, but upon the prominent pathological conditions of the nose and naso-pharynx.

Most authorities agree with me that chronic catarrhal inflammation of the middle ear is an extension of chronic naso-pharyngitis, but they fail to point out that as a rule chronic naso-pharyngitis is due to adenoids or trouble in the nares.

Unless this important point is recognized, we will fail to prevent deafness in many of our patients who should have good hearing until they had passed far down the shady slope of life.

You will remember the first class I have referred to is that of the children with a small amount of adenoids, rhinitis, and recurring earache, with no marked deafness.

Unfortunately parents and some physicians are inclined to think lightly of ordinary earache in children, because, as a rule, the disease appears to go on to a good recovery, and so it does as far as childhood and the attending physician are concerned, but such cases are too often the forerunners of deafness in later life.

My third class, *i. e.*, adults with more or less rhinitis and

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remains of adenoids, with ever increasing middle ear deafness, is but the later appearance of class one.

As such children approach puberty, the adenoids tend to atrophy, and an apparent cure has occurred; but it has only covered up a serious malady that may break forth in later life, perchance when la grippe, typhoid fever, or some serious illness attacks the patient, and we blame the new disease though it was but the exciting cause, the blast that fanned the smoldering trouble into destructive activity.

Most authorities advise the removal of adenoids if they interfere with the breathing space. I agree with them that we must have free breathing space, but I go one step farther and say, if there is middle ear trouble we must remove the adenoids, even though only a small amount exists, that we may remove a constant irritant which continually menaces the ears, and will sooner or later seriously impair hearing unless removed.

The atrophy which takes place at puberty is too often incomplete. It leaves a residue which stands peering into the eustachian canals, and ever and anon an acute coryza starts up afresh the inflammation that has taken its permanent residence in the residue, and this renewed inflammation makes an excursion up the wide-mouthed eustachian canals toward the middle ear, and then recedes to its own domain, to again renew the attack on the slightest provocation, until at last it secures a firm foothold in the canals, producing obstruction, and setting up middle ear troubles.

My plea for the prevention of deafness will fail unless I can advance with force the necessity for removing adenoids, not alone for breathing space, but for the cure of naso-pharyngitis, the forerunner of middle ear deafness.

I shall fail in my object unless I urge with force the advisability of carefully examining the nares and naso-pharynx of every child subject to earache. Unless we do this, we will fail to do our whole duty in preventing deafness.

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I come now to class second, where we have adenoids, deafness, and a discharge from the ears.

In the beginning of this paper I gave a short history of little Mary's case, and I stated that I believed I could have prevented the deafness had I seen her earlier, which indicates my opinion in such cases.

Why is it that some children have ear trouble following the exanthemata, and others have not, though there is no apparent difference in the systems or physical conditions. My answer is, trouble in the nares and naso-pharynx, and as a rule you will find this trouble to be adenoids.

I may be wrong in this. Up to the present I have not been able to collect enough clinical facts to prove it.

If I am right, what life-long misery can be averted by proper treatment.

I place but little stress on strumous causes. Possibly some cases ought to be credited to it.

I cannot find language strong enough to condemn the waiting policy in middle ear troubles of children so often advised by interested but mistaken friends, and even by some faithful physicians.

During the last six months I have had many cases of otorrhœa following scarlatina, and every one of them has made a good recovery. With some a mild, conservative treatment was sufficient, but with others all treatment was useless until I removed the adenoids.

My remarks on the third class have been anticipated by my remarks when discussing the first class, but there is one point I wish to make, that is, when we examine a vault and see no apparent elevation, it is not proof that there are no mischievous adenoids to remove.

I have had several cases of naso-pharyngitis where the vaults appeared normal in shape, and yet there was adenoid tissue, and I could not cure the chronic inflammation until I curetted away a thin layer of adenoids.

I shall pass on to the fourth class, where we have no ade-

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noids, but a post nasal catarrh that is due to a septal exostosis.

If a patient gives me a history of constantly increasing middle ear deafness, and I find no adenoids, I am almost certain to find a septal exostosis which is a constant irritant to the nasal passages, and consequently to the naso-pharynx and ears.

Recently I have given considerable study to the literature of middle ear deafness, and have been surprised to find that while most authors are agreed in saying chronic middle ear inflammation is due to an extension of inflammation from the naso-pharynx, there is almost complete silence on the opinion held by most rhinologists, that post-nasal catarrh is largely the result of trouble in the nares.

We are told to wash out and swab the post-nasal space, but nothing is said about curing the trouble farther forwards, which must be relieved if we wish to prevent future exacerbation of middle ear deafness.

The last division is where we have neither of the two common causes of irritation, adenoids or exostosis, but we have rhinitis and naso-pharyngitis.

This rhinitis may be turgescent, but it is generally hypertrophic. The latter is easily recognized by the uneven, thickened state of the schneiderian membrane, but turgescent rhinitis may escape detection at the first examination.

As you are aware, turgescent rhinitis is due to a disordered state of the vascular system found in the mucous membrane of the nose, especially that found on the inferior turbinated, floor of the nose, and lower half of the septum.

At times these vessels become enormously distended, to be followed by contraction, and if we examine during moderate contraction we may overlook the trouble, where if we had examined an hour earlier we would have found the nares almost occluded with consequent irritation to the post nares and ears.

As many patients have pathological conditions of the nares

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that cause them very little distress, it is a mistake to take the patients denial of nasal trouble.

I place stress on diseases of the nares being a frequent genesis of middle ear deafness, for I am convinced many failures to stop the onward progress of this, the most common form of deafness, are due to neglecting troubles in the nares.

Most authorities on diseases of the middle ear are men past middle life, and consequently received their training before we learned how to treat diseases of the nose, and still continue the old division of oculist and aurist, rather than aurist and rhinologist.

These authorities advise us to inflate the middle ear and swab the post-nasal space, and by so doing we help our patient. But unfortunately the next fall or spring our patient catches cold, and the old trouble grows worse, and we are to blame, for we should have removed the predisposing cause found in the nares or post-nasal space.

Let us prevent and cure nasal and post-nasal troubles, and we will prevent two-third of all deafness.

This is a sweeping assertion of immense importance, and yet it is unknown to people generally, and the burden of educating them to have prompt and proper treatment for such troubles rests upon the medical profession.

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EXTRACTION OF BILIARY CALCULUS FROM THE COMMON DUCT.

THEODORE A. McGRAW. M. D.
Detroit.

While operations on the gall bladder have become very frequent during the past two or three years, the operations on the common gall duct, for the relief of jaundice caused by impacted gall stones, have been comparatively infrequent.

This is to be ascribed, in part, to the great and sudden popularity given to the operation of cholecystenterostomy, among American surgeons at least, by the invention of that unique and ingenious mechanical device, the Murphy button. There is something exceedingly attractive in a proceedure by which, in a few minutes and with comparatively little danger, a patient may obtain relief, for the time being at least, from the discomfort and distress incident to obstructive jaundice.

This is certainly accomplished, in skillful hands, by the use of the Murphy button. The viscera to be united by its aid are comparatively superficial, and a small abdominal incision serves to expose them and to perform the work. The button is easily and quickly adjusted, the bile begins immediately to pass through the new channel, the jaundice disappears, the intolerable itching ceases, the fæces acquire their proper look and odor, and the patient feels himself, almost at once, relieved from a serious illness, and begins to consider himself a well man. It is, therefore, no wonder that the device has, so to speak, taken the surgical world by storm, and that surgeons have been eager to test the promising invention. In the report of Dr. Murphy, published on February 9th, 1895,

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thirty-six cases of cholecystenterostomy were reported by various surgeons for non-malignant obstructive jaundice, with only one death, a truly astounding success, if all cases have been reported, for an operation still new and on trial. In the light of such reports, one feels almost ashamed to proclaim himself a doubting Thomas, and yet there must be, for the discovery of truth, a few who criticize, as well as many who applaud, and I venture to publicly state the reasons why I do not consider cholecystenterostomy a proper operation for those cases of jaundice in which the obstruction is caused by the presence of a stone in the common duct. The objections to the procedure begin at once to become manifest the moment that we ask ourselves, what else ought to be done by a conscientious surgeon besides affording immediate relief to unpleasant symptoms; or we may approach the subject in a different way by asking, what morbid conditions might remain after a successful cholecystenterostomy to plague the patient and cause further disability. We will see, in the first place, that while the symptoms caused by the obstruction have been made to disappear, the stone which caused the obstruction is still in the common duct, irritating it by its presence, and, now that the stream of bile has been diverted into a new channel, without any possibility of being forced forward into the intestine. It remains a constant source of irritation, which spreads usually, in time, beyond the walls of the duct, and causes peritoneal inflammations and adhesions. It may even produce abscess and suppuration, with all their dangerous consequences. How little of the local irritation produced by the presence of gall stones is due to the mere obstruction of the bile stream is seen in the case of these stones which lodge in the cystic duct. Where this occurs, there is no pressure whatever exerted at the point of obstruction, for the simple reason that the bile has a full channel for escape through the common duct into the intestine; yet those stones in the cystic duct which cause no jaundice, no itching, no damming up of the bile stream, nevertheless produce, in very many instances,

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the most acute and constantly recurring agony. Now, while the common duct is larger than the cystic, and while it requires a larger calculus to fill its limits, when obstruction does occur in its territory, it may cause no less disturbance and danger. Here, then, is the first serious objection to the operation with the Murphy button. While it relieves, it does not cure. It leaves behind a focus of irritation which may develop into a condition of danger, and, however important it is to relieve pain, our surgery should aim at something more. We should try not only to relieve but to cure.

But there are still graver objections to be urged against this procedure. We may be content to use an imperfect method in order to bring comfort, even though it does not meet all indications, provided that it does no harm. It is important to ask of every new operation, in what way the organism is injured by its use? What are the conditions left after the use of the Murphy button or any other operation for the establishment of a fistula between the gall bladder and the gut? There is evidently in this operation a firm adhesion established between the gall bladder and bowel. This must inevitably produce at times great traction on one or the other of these organs, and interfere with their movement, and with the performance of their proper functions. In fact, the adhesions produced by gall stones are often more serious and cause more disturbance than the passage of the gall stones themselves It is not uncommon for surgeons operating for bilious colic to find the traces of old gall stones in inflammations around the gall bladder and gall ducts, after the gall stones have entirely passed away. Indeed, the gall stones may in their passage cause no pain whatever, and yet leave behind adhesions which become productive of great distress. There is no more instructive paper in the last year's contributions than the one by Riedel, in which he describes the numerous cases upon which he had operated in which no gall stones whatever were found, but in which all sorts of trouble were caused simply by adhesions. In some patients the trouble

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took the form of severe and dreadful colicky pains, and in others of flatulence and discomfort. Others still had been treated for years, and doped with all manner of drugs for a chronic dyspepsia, which finally yielded to the severance of adhesions by the surgeon's knife. I have had during the last year a patient under my care whose case will bear reporting in this connection, as illustrating this point. Augusta, a German girl, aged eighteen years, had for several years suffered from terrible attacks of colicky pain, which, coming at regular intervals, would last sometimes for two or three days. In these attacks nothing would give her relief but large doses of morphine, frequently repeated. Dr. R. A. Newman was called to attend her, and referred her to me with the diagnosis of cholelithiasis. I operated on her in July, 1894, and removed four gall stones from the gall bladder. As she had never been jaundiced, and showed no signs of obstruction of the common duct, and as the bile poured out copiously through the resulting fistula, I concluded that I had reached the seat of her trouble. Scarcely, however, had she recovered from the operation when her attacks began again, and as they continued in spite of all remedies, on September 4th, 1894, I opened the abdomen again to search for other gall stones in the ducts. The operation proved unsuccessful. No gall stones could be found, and the paroxysms of agony recurred oftener and lasted longer than before. Finally on April 10th, 1895, I made a large incision in the median line, and thoroughly explored the stomach and bowels. I found the stomach adherent to the diaphragm throughout nearly its whole upper surface. I broke up all of the adhesions and made it freely moveable. The omentum was also widely adherent. I loosed it from the bowels, and spread it carefully over the viscera. Thus far the patient, who has just left the hospital, has remained free from her old disorder. The deductions to be drawn from such a case are self-evident. The pathological sequences were as follows: first, a catarrhal trouble of the gall ducts and gall bladder; second, the formation of gall

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stones in the inflamed gall bladder; third, the passage of gall stones through the ducts and out through the intestines; fourth, inflammations extending from the gall bladder and gall ducts to the neighboring peritoneum; and, finally, the formation of permanent adhesions, which found the stomach interfered with in its normal movements, and caused paroxysms of pain. The four stones in the gall bladder represented probably a greater number which had been discharged without making the patient aware of their presence. The histories recorded by Lauenstein, Riedel, and Kehr, demonstrate plainly that permanent adhesions are a fruitful source of misery. It is bad surgery, therefore, to deliberately produce such adhesions between viscera normally mobile, as long as any other way lies open to the surgeon. This, then, is my second objection to the operation of cholecystenterostomy, that it produces permanent and unyielding adhesions between the bowels and gall bladder, which may cause frequent pain, flatulence, and distress during the process of digestion, and finally render the patient liable to attacks of obstruction of the bowel by the bending or twisting of the bowel, if the jegunum, at the point of attachment.

A case of Kehr's is very instructive in this connection, as showing how little relief may be given in these cases by the establishment of an orifice of communication between the gall bladder and bowel. Operating on a patient for severe and intractable distress in the region of the gall bladder, he cut what he thought was a simple adhesion between the gall bladder and duodenum, but found he had divided tissues bounding an orifice of communication between the two viscera. He sewed up the duodenum, removed the gall bladder, incised the common duct, and removed from it two gall stones. He subsequently operated again, and removed from the choledochus other stones, which had either been overlooked or had formed again. Here, then, was a case in which nature performed a cholecystenterostomy, and produced the very same conditions which surgeons seek to bring about by

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the Murphy button, without relieving the pain caused by the trouble.

Now here I wish to call attention to a condition which must certainly arise in many cases after the operation of cholecystenterostomy. After this operation the stream of bile is diverted through the cystic duct and gall bladder into the bowel. The gall bladder takes on itself the function of the common duct. The profession seems to have overlooked the fact that the common duct becomes, to all intents and purposes, an abnormal gall bladder, for, remaining patulous at its upper end, it receives a certain amount of bile which stagnates in its dilated canal. It must not be forgotten that in these cases of obstruction the common duct often becomes enormously enlarged. In one I recently operated on, I could put my thumb into the cavity occupied by the calculus. The bile then collects under circumstances which favor its crystallization. The new gall bladder already contains one or more stones, and is already irritated and inflamed. It may contain pus, but almost certainly contains mucus. Here, then, we have the beginning of a morbid condition, of which no man can foresee the end. There is no reason why, in the course of time, the obstructed duct may not become full to overflow with the numberless gall stones which could not fail, in this receptacle, to cause nearly as much disturbance as in the gall bladder itself. Added to these most valid objections to the operation there is still another. We do not yet know how long the artificial fistula will remain open and permit the free flow of bile. The tendency of such orifices is to gradually contract and close, and what would be the condition of the patient when he ceased to feel the relief given by the operation, and began again to have the old troubles, in addition to those caused by the operation itself.

The history of the cases operated on by cholecystenterostomy is not yet complete. The immediate relief of symptoms has blinded the surgeon to the ultimate consequences of his work. I believe that the after histories of many of these

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operations will be lamentable, and that these same patients will, many of them, in time come back upon the surgeon's hands with aggravated troubles.

For these reasons I feel strongly opposed to the operation of cholecystenterostomy for jaundice caused by calculi in the common ducts. It is a make-shift operation, easy of performance, and rapid in giving relief from symptoms, which will probably retain for considerable time its popularity with the more timid surgeons. It belongs, however, to the period of development in the surgery of the gall ducts, and cannot possibly long retain the place it at present holds.

There is only one rational procedure in case of obstruction of the common duct by gall stones, and that is in the removal of the stones. It is true that in many cases nature accomplished this by forcing the stones through the duct into the duodenum, and cases are not uncommon in which this occurs, and the stones appear in the evacuations. The knowledge of this fact, together with the difficulty in diagnosing the cases from catarrhal and other forms of jaundice, causes many physicians to defer surgical treatment until a late stage of the disorder. The dangers incident to the disease are forgotten, the dangers of the operation are unconsciously exaggerated. An obstructive jaundice is always a dangerous condition. Indeed, the presence of gall stones, even when the common duct is free, brings with it tribulation and trouble enough to warrant radical means for their relief. In the vast majority of cases there would be a probable gain to the patient if, early in the trouble, when symptoms of gall stones occur with or without jaundice, or when jaundice makes its appearance from doubtful causes, an exploratory operation were made, the exact diagnosis determined, and the necessary measures taken for relief. If we exclude the jaundice which accompanies acute fevers and septic conditions, there are few varieties in which an exploratory operation would not be of service. It must be remembered that the beginning of gall stones is a catarrhal inflammation. The gall bladder becomes infected

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from a catarrh which creeps up the ducts from the bowel. The mucous formed and deposited makes the nucleus on which the bile deposits its crystals. The most severe symptoms, those of colicky pain and intolerable soreness, are due, not always to the presence of stones, but often to inflammation of the gall bladder and ducts. Now, the early incision and drainage of the gall bladder enables the morbid secretions to find an exit. The inflammation rapidly subsides, and the case is quickly cured. The absence of gall stones would bring no discredit on the surgeon, for his operation would act curatively on a condition which, left to itself, might produce danger, and certainly would produce serious illness and discomfort. If, on the other hand, gall stones were present, their removal would take place with less pain, and, I will even assert less danger, than if left to find a dubious and painful path to the intestine through the cystic and common ducts. In favorable cases, which means those which are operated on early, before adhesions are formed to obscure the way and render dissection difficult, operations even on the gall duct are not attended by very great danger. In old cases where the surgeon finds himself entangled in a morbid mass to which he has no clue, where stomach, omentum, gall bladder, and small intestines are inextricably mixed and bound together, where the patient has lost his vital force by a long struggle with disease, it may become a very difficult, tedious, and dangerous matter to work one's way to the morbid focus, and extract the calculus which has caused the mischief. In such case, even the most experienced surgeon might be tempted to take the shortest way out of the trouble and perform a cholecystenterostomy. This would, however, be a great mistake. If a patient is so exhausted by long-continued jaundice as to make a prolonged operation inadvisable, the surgeon had better establish a biliary fistula through the abdominal wall. It gives the same relief as the operation of cholecystenterostomy, without injuring the intestine or establishing new adhesions within the abdomen. The discharge

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of bile onto the external surface of the abdomen is indeed not pleasant, but on the other hand, the patient is not deluded into the vain hope that he is now about to get well, when in fact the worst part of the trouble is still in existence. A patient with an external biliary fistula recognizes the fact that he is not yet well, one whose fistula is internal awakes from a false confidence to the knowledge that he is still ill, and in need of surgical assistance. How comfortable a patient may be with obstruction of the common duct and an external fistula of the gall bladder, is shown in a patient of Dr. F. L. Newman upon whom I operated on July 24th, 1894. She was jaundiced and suffering from inflammation of the gall bladder. I operated and found the gall bladder everywhere adherent to the abdominal wall. I opened it and extracted one hundred and fifty-three gall stones. She recovered from some of her bad symptoms, until some months afterwards the fistula closed. She then became jaundiced again, and began to suffer the old pain. Operating on her again, I found that the former adhesions had nearly disappeared, the gall bladder was now adherent only where the fistula had opened into the abdomen. Re-establishing the fistula, she immediately recovered her general health. This woman should have had an operation on the common duct in which there are doubtless obstructing calculi, but she refused to go to the hospital, and her surroundings were such as to forbid such an operation at her home. She is now pregnant, but, excepting for her fistula, in comfortable health.

This case illustrates the good which may be effected in securing the absorption of recent exudations of lymph by removing the cause of irritation. At the first operation, the whole field disclosed by the cut was one mass of adhesions. At the second, with the subsidence of the irritation, I found that the inflammatory products had almost entirely disappeared, and yet the woman is not well. Sooner or later the gall stones lodged in the common duct are certain to cause renewed inflammation and distress. The operation of chole-

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cystenterostomy is, nevertheless, of great service in these cases where, for any reason, it is not advisable to operate immediately on the common duct. It relieves distress, enables the patient to recover appetite and strength, permits often the absorption of inflammatory products, and thus paves the way for the more radical operation on the common duct, which alone will give full relief.

Now as regards the operation on the common duct, which, in my opinion, a surgeon ought never to hesitate to perform for jaundice caused by calculi, the method must of necessity vary with the condition of the patient and the seat of obstruction. Recent cases of obstruction must of necessity offer the best prognosis and easiest operations. There are then no adhesions, no inflammatory masses to obstruct the view of the surgeon, none of the complications such as abscesses, intestinal strictures, and the like, which are to be found in old cases. A woman, thirty-six years of age, came to me on January 9th with jaundice of five months' duration. She was seized when in the seventh month of pregnancy with an attack of colicky pains, which lasted four days. She became jaundiced, lost appetite and flesh, and became inflicted with an intolerable itching. Her passages were thenceforward of a clay color and bad odor, and her urine was continuously charged with bile. She went, nevertheless, to her full time, passed through her confinement without difficulty, and was able to nurse her baby. When I first saw her, she was free from fever, had a dark yellow color and a haggard look, and was covered all over with scratches made by her own nails. Examination of the abdomen revealed nothing abnormal. An operation was advised, to which, however, she did not consent until early in March. On March 6th she entered St. Mary's hospital and was prepared as usual for an abdominal operation. On March 7th I operated on her. An incision was made through the rectus, to the right of the naval, and the peritoneum opened for the introduction of a finger. On making a digital examination of the neighboring organs, I

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found the liver somewhat enlarged, the gall bladder full of bile, but containing no stones which could be felt, and the cystic and common ducts apparently free from all induration and swelling. Enlarging the opening, and carrying the hand down to the pancreas, I felt what seemed to be a tumor in the head of the pancreas. I now cut an opening through the omentum, and incised carefully the mesocolon over the swelling. An exploring needle introduced into the tumor came across a hard substance, which could be nothing else than a calculus. Carefully turning the pancreas over, I tried to uncover the common duct where it runs behind the pancreas, but found it completely surrounded by the gland. I did not then hesitate to cut through the gland and duct wall directly onto the stone. When released by the incision, it popped out upon the abdominal wall as if discharged by a popgun, showing thus the pressure under which it was held. The gland substance at the seat of the cut was about one sixth of an inch in thickness, and not at all vascular. Only a moderate amount of bile flowed through the opening. The stone was nearly round and had no facets. It measured two inches in circumference. The wounds in the pancreas and duct were carefully closed with kangaroo tendon, and the mesocolon sewed together over them. A rubber drainage tube was carried down to the spot, the abdominal wound closed, and the usual dressings applied. The gall bladder was left entirely undisturbed. The result of the operation during the next two days was unpleasant, and not at all reassuring. The itching became more intense, and the color of the skin changed from a brown to nearly a black. After that she began slowly to lose the color of jaundice, but it was fully three weeks before the abnormal yellow had left her skin. Two weeks after the operation a small abscess developed in the abdominal wall, but otherwise her recovery was uneventful. She left the hospital for her home on April 6th, apparently well. This history illustrates a class of cases which, until very recently, were doomed to long years of suffering,

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which, in many cases, ended in premature death. With such large calculi the only hope of relief would be by ulceration and discharge of the stones into the bowel.

The dangers incident to this process are, however, very great. Abcesses are apt to form and break into the peritoneal cavity. If this does not occur, adhesions which bind neighboring organs together long afterwards tease and annoy the patient; even when the calculus finds its way into the gut, the danger caused by its presence is not over. There are now many cases on record of intestinal obstruction caused by the presence of gall stones in the bowel. I have myself had one, the history of which will bear repetition in this connection. It happened in the person of a patient of Dr. Chapaton, of Detroit, a woman aged fifty-five years, who had since childhood suffered from frequent attacks of bilious colic. She stated that she had long felt a hard lump in the right side of the abdomen. After an unusually severe colicky attack the lump suddenly disappeared, and there was temporary relief from pain. She began, however, soon to suffer pain again, and vomiting and other symptoms of obstruction became manifest. On operating, I found the bowel occupied at the junction of the jejunum and ileum by a large gall stone which completely filled its lumen. I extracted it, after incising the gut. It was found to weigh two hundred and fifty grains. It had succeeded in passing, though with difficulty, through the jejunum, but on reaching the narrower part of the bowel had caused such terrific irritation as to produce a volvulus. It was interesting to note, in the condition of the mesentery, the traces of the severe struggle, for the mesentery for a long distance was marked by streaks and patches of extravasated blood. The patient made a good recovery, but owed little thanks to the conservative medicine which had permitted her for years to bear her malady unrelieved. This, however, is a digression.

Returning to the question of operation; such a case as this I have reported, in which the calculus was extracted through

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the pancreas, must be regarded as one of the easiest. The woman had been recently confined, her abdominal muscles were relaxed, she had lost much flesh, and her abdomen contained but little fat. There were absolutely no adhesions and no complications. The surgeon could not ask for an easier case. Far different must be those cases in which the operation must be made through hard, thick abdominal walls, on patients whose vital forces, through long-standing disease, have become enfeebled, and whose abdomens are occupied by old inflammatory indurations which bind all organs together, obliterate all landmarks, and make every movement on the part of the surgeon one of peril. The pages of Riedel and Kehr present cases in which enormous difficulties have been overcome by a pluck, patience, and courage which extort the admiration of the surgeon. They all, however, sing one song which the practitioner may listen to with much profit. It is the warning against delay; the delay which permits a patient to suffer for years from colic and abdominal distress; which lets him become jaundiced, weak, and enfeebled; and which suffers the abdomen to become filled with indurated tissue which interferes with the movements of all the abdominal organs. In old, neglected cases, the difficulties are such as to call for all of the resources of the most experienced surgeon. I do not propose, in this paper, to discuss all these difficulties, or the methods of overcoming them, but I must call attention to two points in the after treatment upon which I think a uniform success will depend. These are immediate suture of the gut, and proper drainage. Certain authors have advised and practiced the method of incising the duct, and leaving it unsutured to heal by granulation. This seems to me an error in practice. In these cases, as in all others, the effort should be to secure union by first intention, and this is put out of the question if the incision in the duct is not sewed together. Even though the sutures do not hold, they accomplish good by preventing the escape of bile until the peritoneal cavity has become shut off by adhesions from the seat of injury.

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This takes place in twenty-four hours, and it is a poor suture that would not last that long. In many cases the duct will heal by first intention. This happened in a case which I have just reported. After the duct and pancreas were sutured, not a drop of bile escaped. I am inclined to think that an incision through the pancreas into the duct may be preferable to one through the naked duct wall, for the reason that the surgeon is enabled to apply two or three tiers of stitches, and thus fortify the tissues against the escape of bile. The immediate result after operations on the common duct is sometimes to cause an immediate exacerbation of symptoms. This happened, as I have reported, in my own case. It is probably due either to a clogging of the duct with coagula of blood, or to an obstruction by swelling of the incised membranes. There is always danger of a subsequent escape of bile through the wound in the duct, and therefore drainage by a rubber tubing is, in my opinion, the only proper practice in cholecystotomy.

Drainage by means of gauze is to be avoided, for gauze does not act efficiently as a drain for bile. This is especially true of iodoform gauze. I lost one patient after the extraction of a calculus from the cystic duct by trying to treat it without suture, and with iodoform gauze drainage. There had been considerable oozing, and I had flooded the abdominal cavity with water, a practice which I have since entirely abandoned. The wound in the cystic duct was deep and inaccessible, and I contented myself with inserting a gauze drain. On the next morning the dressing was saturated with bloody water, but no bile. The temperature was normal, but the patient complained of great pain. On the second morning the temperature began to rise, and the iodoform gauze was removed. Its withdrawal was followed by an enormous discharge of bile, and yet the gauze itself was hardly stained. The patient died of peritonitis. Here, then, was a gauze drain which acted with great efficiency in regard to the conduction of water, and not at all as a drain for bile. Whether

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the fault lay in the gauze or in the chemicals incorporated with it, I am unable to determine.

To conclude this somewhat rambling paper, I would urge upon a general practitioner the careful study of what has been done of late years by surgeons in relieving the distressing maladies which have their seat in the upper part of the abdominal cavity. The greater number of these are connected with maladies of the gall bladder and gall ducts. The presence of gall stones, the occurrence of inflammations in the gall passages due to sepsis conducted from the intestines, the formation of adhesions between the viscera, and the growth of cancers and tumors in these and neighboring organs, can often be diagnosticated only by exploratory operations, which fortunately, if properly conducted, have little danger. The most of the maladies of these regions can be cured or relieved by surgical operations, some by the natural process of cure, and a few, a very few, by internal medication. How long, then, shall we permit such patients to suffer their woes without instituting rational measures for their relief?

Since writing this paper I heard Dr. Elliott, of Boston, read the resume of an article on the subject, in which he expressed substantially the same views in reference to the proper principles on which treatment should be conducted. How nearly our views will coincide can be better determined when his paper is printed in full.

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REPORTS OF INTERESTING CASES.

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Grand Rapids.

In 1892, in a paper read before the American Medical Association, I reported five cases of mastoid suppuration complicating acute suppurative otitis media. Four of the five cases were operated upon and pus found in the cells and antra. All recovered except the one unoperated. In this one an autopsy proved the diagnosis. In none of these cases were there external swelling, redness, œdema, or pain over the mastoid, and the diagnosis was made in a manner original with the writer, so far as I know or could learn from anything that had been published up to that time. It had long been my belief that many people had died from meningitis, cerebral abscess, and pyæmia complicating middle ear disease, whose deaths were attributed to other causes. Both before as well as since that time I have certainly seen death result in several cases from such complications. In the paper referred to I advocated early operation as a safe surgical procedure, and stated that I did not consider the operation, *per se*, dangerous to life, and I am still of the same opinion. Since my paper was published I have received many letters and reprints from prominent Otologists endorsing the views expressed therein, and numerous cases are now recorded of a similar nature. Some have even gone further, and advocate opening the mastoid in obstinate cases of chronic suppurative otitis; while others advise the operation as a means of diagnosis in acute otitis media, so as to be sure no pus is allowed to remain in the cells undetected. It is not my purpose,

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however, to discuss the merits or demerits of this operation. Believing that a report of several cases which present points of unusual interest would be the best means of promoting discussion of this important subject, and desiring to get these cases on record are my only excuses for this paper, and if you will bear with me a few minutes, I will report them in brief.

I wish to say while passing, that the statistics bearing upon this subject fully prove the gravity of suppurative middle ear disease, and I will quote briefly from a few of the many. Though a large per cent. of cases of acute suppurative otitis media recover under ordinary or even bad treatment, we do not know what case may be complicated and prove fatal.

Dr. Clark, of Chicago, reports a case of thrombo-phlebitis of the lateral sinus, jugular and innominate veins, with metastatic abscesses in the lungs, causing death. There had been no complaint by the patient of ear disease at the time, but an autopsy by Dr. Hektoen revealed mastoid abscess as the cause of the condition, which had not been suspected, but was supposed to be malarial fever.

Any inflammatory process attended with pus formation in such close proximity to the brain, especially in the deep recesses of the skull, like the middle ear and mastoid antrum, should not be regarded lightly, as is too frequently the case. I fear that la grippe is now the pack-horse for bad diagnoses, as malaria has been in the past. The doctor is too apt in obscure cases attended with fever to content himself by presuming it to be that unaccountable la grippe.

In Dr. B. Alex Randall's tabulated statistics of 4785 cases of ear diseases treated in the Philadelphia Polyclinic, of which 3,914 were middle ear disease, he found:

Simple acute	223	
Suppurative acute	457	
Suppurative chronic	918	
Empyema of mastoid	11	76
Caries of mastoid	49	
Caries of tympanum	16	
	2074	

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This shows in 2074 cases serious condition in 76, or 3.5 per cent. of the cases.

Pitt found in 9,000 consecutive autopsies, 158 deaths due to suppurative otitis. Bezold found in 325 cases of ear disease, 1.5 per cent. of deaths.

Barker, from London hospitals, in 8020 consecutive autopsies found 179 deaths from suppurative otitis.

Pierce found, in the University Hospital, London, in 820 cases of acute and chronic otitis media, a mortality of 2.5 per cent. The statistics of mastoid disease and operations published by Dr. Frank Alport in the Journal of the American Medical Association of 1892 and 1893 tend strongly to prove that death following mastoid operation is due to the condition for which the operation is performed, and not to the operation itself.

CASE I.—Mrs. J. H. M., age forty-two. Was called in consultation with Dr. J. A. DeVore, and got the following history. Had always been quite well but never strong. Had earache and some discharge from the left ear two years before, following an attack of la grippe, but soon recovered. Was taken with la grippe again about two months ago, and left ear became painful, membrana tympani ruptured, and pus has been discharging ever since in considerable quantities. Has considerable pain by spells; temperature 104.2°. Has a sense of fulness in the left ear, and feels dizzy. On examination I found marked swelling in the auditory canal. One-half of the drum head had ulcerated away. Some tenderness on pressure over the mastoid. There was extreme swelling and œdema over the mastoid. Could not hear the voice in a loud tone. Heard tuning fork over the mastoid. As all signs and symptoms were present which are regarded as pathognomonic of pus in the cells I advised operation, which we did under chloroform. Made a curved incision close to the insertion of the auricle, from the tip of the mastoid to a point above the ear. Commencing immediately behind and on a level with the external auditory meatus, I separated the

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periosteum and all the soft tissues from the back wall of the auditory canal clear to the bottom of the tympanic cavity. With a hollow chisel and mallet I then exposed the cells, and went into the antrum (which was fully three-quarters of an inch from the surface), then chiseled through into the tympanum at the bottom. We found the cells and antrum full of lymph, but no pus. The next day pus flowed freely from the antrum and cells. She made a rapid recovery, and in a few weeks was coming to my office with a glass drainage tube in the mastoid. In four months the hole in the drum-head was healed and hearing was perfect, even better than in the right ear which was somewhat affected by catarrhal deafness. At no time after the operation did her temperature go to 101° until it was caused by a little abscess at the point of the mastoid, after opening which her temperature remained normal. This case is of interest, as it bears upon a diagnosis of pus in the cells. Pain, swelling, œdema, and redness over the mastoid, which have hitherto been our main reliance and guide to a diagnosis of pus in the cells, in this instance utterly failed us, and no pus was found.

CASE II.—Mr. R. V., age forty-nine, referred to me by Dr. Boot; called with his brother at my office at 1 P. M. Said he had fever a year before; had earache and discharge from the ear for a month or so, when it ceased; had no more trouble until about three weeks ago, when his ear began to discharge. He had never suffered pain during the last attack, but had been working every day at wood carving. He said: "This morning when I got up I felt stiff in my jaw, and it was hard for me to open my mouth." On examination I found temperature 102°, pulse 110, pus flowing so fast that it filled the canal in twenty minutes or less. No granulations obstructed my view, and I could see clearly a swelling from the upper and back of tympanum which crowded the drum membrane far forward and downward. There was some swelling of the back wall of the auditory canal out as far as the beginning of the cartilaginous portion. Had no pain or tenderness over

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the mastoid, but there was a distinct swelling back of the mastoid process, which felt boggy, and was as large as a silver dollar. I sent him to the hospital and had him thoroughly prepared for an operation. Under chloroform anæsthesia, in the presence of several physicians, I incised the soft tissues as in the case just reported, and with hollow chisel and mallet I opened into a cavity, through about one-quarter of an inch of solid bone, three-quarters of an inch back of and on a level with the meatus auditorius externus. A flood of pus filled the wound and ran over the surface, and was followed by a gush of venous blood. My first impression was that I had opened the lateral sinus, but the hemorrhage soon ceased. With the blunt end of my chisel I probed the cavity carefully, but to my surprise could feel no internal bony wall. I dressed the wound with bichloride gauze. I saw him next morning; temperature 100°, pulse 100; felt "well." I carefully irrigated the cavity and ear; there was very little pus. In the evening I examined the cavity in the mastoid through the opening in the bone, which was one-half inch in diameter, by aid of a head mirror. There were no mastoid cells, and the inner bony plate was entirely absorbed away, leaving the duramater bare over a surface seven-eighths by one inch or more in diameter. The lateral sinus, to the extent of an inch or more, could be plainly seen, and at about the middle of its exposed portion a small vein could be seen where it had been broken off, and about one-sixteenth of an inch remained attached to the lateral sinus. Drs. Boot, Fuller, Kelly, and others examined the case and saw the condition described above. His temperature went up to 100° but once after the operation, and in six weeks he left the hospital well, but wearing the drainage. He made a perfect recovery, and works at his trade. I see him frequently, and his hearing in the operated ear, which had been *nil* for a year before the operation, is now nearly normal.

CASE III.—Mrs. J. Had earache, and profuse discharge followed poultices applied over the ear. Saw her with the

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family doctor. Temperature fluctuating between 99° and 102° or 103°. Had some pain in the mastoid region, but no swelling. Drum head freely open, about one-third having sloughed away. Swelling from upper and back wall of tympanum. Profuse flow of offensive pus. Advised opening mastoid, which they declined. I therefore abandoned the case, which was treated by the family doctor by irrigation, Politzerization, etc., for about six weeks, when the discharge nearly ceased. Temperature had been from 99° to 101° during this time. In a few days she had a chill, and fever followed. Temperature dropped to normal, and in a day or two became subnormal. She could retain nothing in her stomach, vomiting whenever she moved; was dizzy and stupid. I was called again, found her tongue red and dry, pupils contracted. Told the doctor she had evidently meningitis with effusion, or cerebral abscess, caused by suppuration in the mastoid, and that I believed she would die in a very few days. She soon sank into a coma and died in two or three days.

In this case no autopsy was secured. I firmly believe that an operation at the time I first saw her would have saved her life.

CASE IV.—Mr. Wm. T., age forty-two, referred to me by Dr. Eugene Boise. Has chronic discharge from the left ear. Was taken with chills, and temperature varied from 99° to 103°. Was treated for fever for two weeks, when he was turned over to me on account of a profuse and offensive aural discharge, and the conclusion by his physician that his trouble was due to that cause. I found him somewhat delirious, restless, and a profuse offensive discharge of pus mixed with blood issuing from his left ear. Diagnosed mastoid disease from signs and symptoms similar to those in case No. 3; advised operation as the only chance of saving life, which was, perhaps, at that time one in a thousand. They were strangers in the city, having recently come from Chicago, and wanted counsel. Two aurists and two other physicians saw him with me. One aurist thought he would recover without operation

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other than making a free opening into the tympanum, which he did with a Graefe knife; the other aurist and the two other physicians thought there was no hurry about operating, and we left the case in care of one of the physicians. He grew constantly worse, continued delirious, vomited, became comatose, and died in five days. No autopsy was had to settle the diagnosis.

CASE V.—S. B. E., age seventeen, referred to me by Dr. Graves. Had been at Ottawa Beach for a month late in the season. Had been bathing every day and diving frequently. Came home with slight purulent discharge from both ears; had some pain, but not severe. Both drum heads were perforated. There was considerable swelling in the external auditory canal. I treated him a few days, when the discharge ceased, but the swelling increased and extended over one mastoid. I concluded he had external mastoid periostitis, and sent him to the hospital. Temperature 102°. I made Wild's incision, one and one-half inches long, through the periosteum, and pain ceased. Temperature dropped to 99°. Two days later the other side became painful and swollen, and his temperature raised to 101°. Under chloroform, I made Wild's incision, and pain abated at once, temperature fell to normal, and in a week he left the hospital, and made an uninterrupted recovery. This was a case of external mastoid periostitis pure and simple, and was caused by myringitis, and extension of inflammation along the periosteum over the mastoid. This, like case No. 1, goes to prove that pain, swelling, œdema, and redness over the mastoid does not necessarily indicate that there is pus in the cells or mastoid antrum.

CASE VI. is of special interest for several reasons, which will appear later.

February 21st was called by Dr. Rutherford to see Miss H., age twenty-seven years. She had been suffering from pains in both ears for twenty-four hours. On examination, I found both drum membranes inflamed and bulging from accumulation

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of bloody serum in the tympanum. Temperature 101°, pulse 100. No cause could be assigned for the ear trouble. The left ear being the worse, I punctured the membrana tympani, and bloody serum flowed freely. Was called again in a few hours, and opened the other drum head with like effect as in the left ear. There was extreme congestion in both ears, and though the pain was relieved for the time, it soon returned in both ears. I ordered leeches, and morphia to relieve the pain. Next day, temperature 98.8° to 99°. The next four days the temperature was below 99°. Pain continued intemittant, and pus was flowing freely from both ears. Fifth day, temperature rose to 101°. Complained of deep-seated pain in ears, and extreme sense of pressure. Leeches had been applied. Ordered blisters over the mastoid, which filled well. Sixth day, had counsel of several physicians. All symptoms aggravated. I determined to open the mastoid, which I did on the left side in the usual way, and found the cells and antrum full of lymph and blood, and some small deposits of pus. I opened from the antrum into the middle ear through the bony wall. I then made a Wild's incision on the right side. Pain was relieved on the left side, but continued on the right. At the operation we noticed, just in front of the tragus, a red spot as large as a twenty-five-cent piece surrounding a recent leech-bite, but thought it nothing serious. At night, to my surprise, it had spread to the size of three inches in diameter, extending over the cheek and eye. We saw we had a case of erysipelas as a complication. It spread over the face, head and neck, and in a few days had enveloped the shoulders, and had extended down the back as far as the last dorsal vertebra, but had not attacked the wounds over the mastoids, which were made within a portion of skin which had been blistered by Spanish fly. As the patient was delirious and seemed to be growing worse, and erysipelatous process was steadily going on, not being checked by carbolic acid, sub-cutaneous injections of boracic acid, etc., I determined to circumscribe it by cantharideal collodian. This was

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suggested by the fact that, though the whole head was enveloped by erysipelas, the part which had been blistered escaped. This treatment cut short the process, and the inflammation never went beyond the blister, which extended in a line over the breast and back, encircling the whole body. In a few days the erysipelas was entirely cured. At the end of thirty days she still had severe pain in her neck and arm, and some in right ear. Pulse 100, temperature 104°. The symptoms caused by erysipelas had made it impossible for me to judge what part of her fever, delirium, and pain were due to the ear or mastoid, and what part to the erysipelas; but, as her temperature was above 100°, and erysipelas was cured, with pus flowing from her right ear, and swelling at the upper back part of the tympanum, I decided to open the mastoid, which I did, and evacuated two or three drams of pus, and the pain was relieved. From this time she went on to complete recovery. I removed a small sequestrum of necrotic bone from the wound in left mastoid during this time. She was completely deaf in both ears before the operation, but the ear first operated upon was soon restored to hearing, while the hearing in the other ear is still defective. I wish to say in closing that, had I such a case to treat again, I should open the mastoid on both sides at the time of the first operation. I hope my paper will not lead you to think that I advocate the too free use of the chisel and mallet, for I certainly do not, but as many cases are obscure and liable to be overlooked, I would advise vigilance and care, so that dangerous cases may not pass unnoticed until irreparable damage has been done.

CASE VI.—Mr. M. D., age fifty, Hollander. When a boy had ear ache and a discharge from the left ear for several years, which finally healed and quit discharging. Had no more trouble until he was thirty years of age, when the ear began to discharge small quantities of pus. Had been deaf in the left ear for twenty years or more. About six months before had considerable pain, and a swelling took place just above

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and in front of the helix. He consulted an aurist who ordered poultices applied. This treatment was continued for some weeks. The doctor then punctured the swelling with Graefe's knife and evacuated some pus. He repeated this several times and continued the poultices. He then (after some months) fell into the hands of another aurist, who made an incision over the mastoid, about a half inch long, but got no pus. The case did not improve and the second aurist turned the case over to me, saying if I could do anything for him to do it. At St. Mark's Hospital I made a careful examination, and by probing through the incision first made by the Graefe knife I detected a hole in the temporal bone. Temperature 102°, pulse 110. I then prepared him for operation, and under chloroform made an incision about an inch in length in the abscess just in front of the helix, and by passing my finger in could feel a hole in the temporal bone, about three-quarters of an inch in diameter, and exposing the duramater; the bone was roughened, and I diagnosed caries of the temporal bone. I then extended the incision upward and forward over the temporal to the frontal bone; commencing at the lower end of the first incision, close to the helix, I made an incision about three inches in length upward and backward to the masto-occipital junction. I then made an incision from the latter down behind the ear to the tip of the mastoid. Keeping close to the bone and raising the periosteum, I laid back the two upper flaps, and in like manner separated the attachment of the ear, and carried it forward and downward on the jaw and neck. Now, having the temporal bone exposed, I separated it from the parietal and frontal bones, and with Bockman's spoon gauges and chisel removed the whole temporal bone, while Dr. S. C. Graves held up the temporal lobe of the brain with his hand.

The only portion of the temporal bone not removed was a small portion of the inner end of the petrous portion traversed by the internal branch of the carotid artery. The piece was loose and movable, and with my thumb and finger I could

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grasp it and move it about. I should have removed this little piece but for the advice of some of the doctors present, who thought the man would not get off the table alive, though he appeared in good condition. I argued that the whole bone should be removed, to be successful, for it is a well known fact that as long as any of a carious temporal bone remains, it will cause suppuration. Under the press of opposition I left the piece of petrous bone. I then brought the flaps together, after thorough washing with bichloride (1-3000), put in a large rubber drainage, and united the upper flaps by interrupted sutures. The temperature fell to 99°, and did not go above 100°. The wound was kept well irrigated, and in two weeks it had healed and pushed the drainage tube out. Four days after the operation the patient sat up, and in a week was walking around the ward. Temperature and pulse normal, and appetite good. About a week after the wound was healed completely he had some deep pain in the region of the tragus. Temperature began to fluctuate. A small swelling occurred over the junction of the malar portion of the zygomatic process with the temporal. I made an incision, and removed a small piece of temporal zygoma and the wound healed. Pain and fever continued for four days, when the temperature fell to 97°, and in two days he died. At the autopsy which was made by Dr. H. Lupinski, we found between the duramater and pericranium in the temporal region on the operated side, a fibrous deposit about as thick as the skull which had been removed, which formed good support and protection to the brain. The arachnoid membrane was free in the temporal region, except in five points immediately beneath the hole first found in the temporal bone, which was evidently caused by the punctures made with the Graefe knife, or a small silver probe.

Surrounding the piece of petrous bone which was left there was an abscess full of rather thin pus, from which septic absorption and septic meningitis had taken place, which caused death. The only signs of meningitis were at the base of the

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brain, in the region of the petrous bone which was left. This case is of special interest in connection with the consideration of mastoid and middle ear disease for the following reasons.

First. It was caused by suppurative otitis media.

Second. It illustrates how nature may protect the brain and membranes, and tolerate pus in contact with the duramater.

Third. It shows the great tolerance of the temporal region to operations.

Fourth. It is fair to suppose that had the little portion of petrous bone been removed at the time of operation, the patient might have recovered. Before the operation, he could not open his mouth or move the lower jaw; a week after the operation he could open his mouth and masticate food.

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SOME FEATURES OF STRABISMUS.

LEARTUS CONNOR, M. D.
Detroit.

Landolt, in his classical work, says: "A strabismus operation, when undertaken without an exact knowledge of the optical and muscular functions of the eye, is but a rude and dangerous experiment." The reason for this statement springs from the fact that strabismus is merely a symptom of numerous pathological and congenital defects, and its rational management calls for the study and removal or correction of these, so far as is practicable. The story of strabismus well illustrates the persistency by which the profession traces a symptom to its origin, in order that its cause may be removed, and the symptom cured. Failure of squint operations have led to such study as revealed the reasons for past defeats and the methods for future success.

At present we know that some cases of squint are readily curable, that some are incurable, and others doubtful, calling for additional study ere they can be classed either as curable or incurable. Diefenbach operated first for convergent squint in 1839, by dividing the belly of the internal rectus muscle. His operation was based upon the analogy of operations upon contracted muscles in other portions of the body. He reasoned that since division of contracted muscles or tendons elsewhere restored muscular equilibrium, it should do so in the ocular muscles. He neglected to note that the problem of contracted ocular muscles differed radically from that presented elsewhere, in that opposing recti, and their associated elastic tissues, constantly tended to separate their divided

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ends. Hence, the results obtained by himself and others were so frequently disappointing and actually disastrous that, except for the radical change introduced by Bohm, the operation must have passed into merited oblivion. This transferred the state of the operation from the belly of the muscle to its tendinous insertion, thus leaving the capsule of Tenon mainly undisturbed. The technique of the operation was so perfected by von Graefe as to render it easy and safe of performance; especially useful were his methods for either increasing the effects of a tenotomy, or diminishing the same.

The ophthalmoscope enabled us to see that some cases of squint were due to diseases of the refractive portions of the eye, distorting the passage of the rays of light in their course to and from the retina, or, as in case of disease of the optic nerve, cutting off the power of transmitting the impression made by the rays of light upon the retina to the brain.

Not a few cases were traced to corneal opacities. Eyes entirely blind were found to often squint. Thus the symptom squint was traced to a variety of pathological conditions having one common feature, viz, they rendered the vision of the two eyes unequal, and so deprived them of the "guiding sensation." With these facts in mind, it is clear that a squint operation, without previous careful ophthalmoscopical examination, must be a "rude and dangerous experiment."

Donders' studies of refraction and accommodation traced this symptom to other and more common sources. Thus he showed that three-fourths of the cases of convergent squint were hyperopic, and an equal proportion of the cases of divergent squint were myopic. He also pointed out the intimate relationship between convergence and accommodation, a physiological fact which anatomical researches have supported by demonstrating the close relationship of their centers in the floor of the fourth ventricle. When the eyes accommodated by the contraction of the ciliary muscle, they also converged by the contraction of the internal recti. The bearing of this fact upon the cause of squint is apparent when it

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is remembered that the hyperope is compelled to accommodate at all distances, and so the ciliary muscles are in a state of constant tension, and with them the internal recti. The flattened eyeball of the hyperope has broken the harmony which should exist between convergence and accommodation. Thus, if the hyperope accommodate for twelve inches, as in reading, the convergence will be at a point less than twelve inches if the muscles are of normal power. The result is a diffusion of impressions upon the retinæ, to escape which the squinting hyperope turns one eye in, and fixes the other at twelve inches, ignoring the impression of the squinting eye. A repetition of such acts forms a squint habit, which, while at first alternating, at last becomes usually fixed. The habitual suppression of the image in the squinting eye is followed by a loss of the power of perception, a loss which can be repaired if the retina be normal at the first. Thus we have convergent squint due to eyes defective in the length of their antero-posterior axes. To the query, why all hyperopes do not squint, it is replied that in those who do not squint the normal balance between the power of the internal and external recti is so changed that, instead of being four to one, it is less, only two to one, or even one to one. Hence in the non-squinting hyperopes the excessive convergence required for distant vision is balanced by the weak interni, so that the eyes remain straight. If the externi be much in excess of the interni, we have a hyperope with divergent squint. In support of this view of the causation of squint advanced by Valk, I have habitually found all hyperopes to have weakened interni, as measured by the standard of four to one.

Donders found that myopes needed little or no accommodation, because the eyeballs were already too long; hence the convergence in near seeing would be nil, and so if the strength of the recti was normal, the eyes would turn outward and give a divergent squint. But if the externi were weak, the eyes might remain straight, or, if very weak, they might turn in and give a convergent squint. Aside from muscular action

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in causing divergent squint in myopes, we have the elongated antero-posterior shape of the eyeball; the greater distance between the temples of myopes; allied variations of the orbital fat, and of the attachments of the ocular muscles to the bony walls.

These studies in refraction, accommodation, and action of the external muscles of the eyes have led to far reaching consequences in the management of the symptom, squint. Thus it has been shown that some causes of convergent squint can be permanently cured by the wearing of such convex glasses as fully correct the abnormal flatness of the eyeballs; that some cases of divergent squint can be cured by the wearing of concave glasses, which reduce the refractive power of the eyes to their normal standard. The symptom disappears when we have restored the lost equilibrium between the refraction and the ciliary and recti muscles.

As the nature of mydriatics became understood, it was found that their use in paralyzing the accomodation permitted the recti to assume their normal functions, and so facilitated a cure of cases in which the squint persisted after the defects of refraction had been corrected by appropriate glasses.

Statistics on a large scale show that while tenotomies and advancements cured many cases of squint, the intelligent correction of refractive defects and the use of mydriatics cured many additional cases, added to the number of those who secured binocular vision, and diminished the number of divergent squints following tenotomies. Thus, by distinct lines of evidence, we have traced the symptom, squint, in many cases to defects of refraction and abnormal ocular muscles. This result is still further confirmed by recent studies of those smaller disturbances of muscular equilibrium known as insufficiences or heterophorias. These studies have encouraged surgeons to seek binocular vision in the management of squint, rather than rest content with the straightening of the eyes, because they have given us finer and more precise meth-

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ods of operating, and more suitable instruments both for determining the muscular disability and for doing the operations; in short, they have furnished us with a micrometer adjustment for the doing of squint operations, and so raised them to a higher perfection.

Finally, squint has been traced to a defective structure of the retinal percipient elements, congenital in its origin, unchangeable in character, and causing an inability to see other than large objects. Upon these eyes neither glasses, atropine, or tenotomies have other than a cosmetic effect; only operative procedures avail aught in their management.

Having collected all existing knowledge respecting squint, we see still vast fields uncultivated, fields adequate for the surplus energies of more than a generation of physicians. Thus, we want a comparative study of the origins and insertions and other relations of the ocular muscles; the modifications of their activities by the varied shapes and sizes of the eyeballs, by the individual peculiarites of the capsule of Tenon, by the quantity and quality of the orbital fat, or the fibrous stroma which holds it in place. We want a comparative study of the orbital walls as bearing upon their contents and the functional activities of the eyes. We have still much to learn of the nervous apparatus of the eye and its muscles, of its visual and motor centres, and of the complex relationship of this apparatus to other organs; in fact, time fails us to even enumerate the fields awaiting investigation in their relation to the causation and management of squint.

However, our present knowledge enables us to attain very satisfactory results in an increasing number of cases. It is a marked advance in that we aim, not only to straighten eyes, but to have the patient possess binocular vision. This is attained by supplementing the operations for squint with gymnastic exercises, innervation treatment, or partial tenotomies, until we have enabled the eyes to fix upon any point within the visual field. This necessitates a cordial co-opera-

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tion of physician and patient during an extended period, varying with individual cases.

For convenience the management of squint may be divided into operative and non-operative.

The operative measures are tenotomies of the stronger muscles, or advancement of the weaker ones, both of which may be needed in the same case.

The non-operative means are:

First. Careful attention to the patient's constitutional condition.

Second. The correction of all defects of refraction so far as these affect the squint unfavorably; the correction to be made from data obtained while the eyes are fully under the influence of atropine.

Third. The continued use of mydriatics.

Fourth. The use of gymnastic exercises, or the innervation treatment of Gould, to increase the power of the weaker muscles, or to bring them into co-operation with the stronger.

In each case the surgeon is met with the question, "is this an operable one?" To aid in answering this I give brief extracts of four typical cases, whose condition I was able to record many years after the treatment affording the final results of convergent squint.

CASE I. Boy aged five, strong, with marked convergent squint of the left eye, noticed when six months old. An examination with the ophthalmoscope showed healthy ocular media; vision of right eye was $\frac{20}{20}$, of left $\frac{20}{200}$. Under a mydriatic the ophthalmoscope showed a hyperopia of a dioptric and a half. The full correction of this was prescribed, and the ciliary muscles kept fully under the influence of the atropine, but at the end of six months the result was negative. The internal rectus tendon was now divided, and the other treatment continued, with the final result of leaving the eyes perfectly straight, but with no improvement of vision even fifteen years after the tenotomy. This was clearly an operable case, as nothing but the tenotomy changed

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the squint, and even it failed to improve the vision. Such cases are defective in the percipient elements of the retina of the squinting eye, or its optic nerve relations.

CASE II. A healthy girl aged nine; convergent squint of right eye since one year old, at first alternating, but finally fixing. The ophthalmoscope showed perfectly healthy media in both eyes, and a hyperopia of two dioptrics in the right eye, and one and a half in the left; vision of right eye was $\frac{20}{200}$, of left eye $\frac{20}{40}$. Full mydriasis and correction of the hyeropia failed to benefit the squint, so that a tenotomy of the right internal rectus tendon was done. This failing, a month later the left internal rectus tendon was divided, with the result of making the eyes practically straight, and, after many months, bringing the vision of each eye to $\frac{20}{20}$. These two cases were alike in both requiring ocular tenotomy, but unlike in that the vision of the first was unimproved, while that of the second became normal, though the same methods were employed. The first represents a class of cases congenitally defective in the percipient elements of one eye, and so incapable of development; the second stands for a class in which vision is lost by non use, but can be restored if the eye can be placed in such relations as will admit of the normal exercise of the retinal elements.

CASE III. Boy aged five; squint noticed when two years old; alternating then and at examination; vision of each eye $\frac{6}{40}$; hyperopia, two dioptrics, the correction of which gave a vision of $\frac{20}{20}$, and rendered the eyes perfectly straight. Atropine was used six months, and the correcting glasses worn constantly, with the result that ten years later the eyes were straight, and the vision binocular and normal.

CASE IV. Boy aged eight; convergent squint of the left eye, noticed when year and a half old as alterating, but now fully fixed; ophthalmoscope revealed perfectly clear media, and a hyperopia in the right eye of two dioptrics, and in the left of two and a half; vision of the right eye $\frac{20}{30}$, of the left $\frac{20}{100}$. Glasses correcting the hyperopia both straightened

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the eyes and substantially improved the vision of the fixed eye. This improvement continued till the vision of the squinting eye was equal to that of the other, and, nine years later, the vision continued normal and the eyes perfectly straight.

The last two cases were clearly non-operable. True, a tenotomy would have rendered the eyes straight, but later they would have diverged.

To avoid complexity, simple hyperopic cases are selected, but cases of hyperopic astigmatism, simple or complicated with hyperopia, obey the same laws.

It follows that in every case of uncomplicated squint the question arises, does it belong to the class of congenital amblyopias or no? If the answer be affirmative, the case can be operated upon at once for cosmetic effect, there being no hope of improving vision. If the answer be negative, we must separate the operable from the other cases.

The following has been found a safe method of procedure.

First. Eliminate all cases of paralysis.

Second. With the ophthalmoscope detect all squints due to opacities in the refracting media, and treat them by operations, as in congenital amblyopia, for cosmetic effect merely.

Third. Determine the vision of each eye, and the kind and degree of ametropia under mydriasis.

Fourth. Correct the full amount of ametropia, and, if this renders the eyes nearly or quite straight, an operation is inadmissible, and the cases will probably go on to full recovery under the use of glasses and atropine.

Fifth. If glasses and atropine produce no perceptible effect upon the squint, then a tenotomy of one or both recti is indicated, followed by the use of glasses to relieve the eye strain, and to retain the eyes in the position resulting from the operation. The securing of binocular vision in this class of cases is materially aided by gymnastic training of the weaker muscles, and the co-operation of all.

Sixth. The time for operating upon convergent squint de-

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pends entirely upon the ability of the surgeon to separate the operable from the non-operable cases. An operable case is best treated as early as the co-operation of the patient can be secured—usually at about six years.

Seventh. If glasses correcting full ametropia be worn at an early date, the normal relations of convergence and accommodation are sooner established, better developed during child growth, and the ultimate vision is more perfect.

Eighth. To secure the best results calls for much attention to the management of these cases during a period extending over months, or even years.

Ninth. As to the the final balance of the internal to the external recti, a proportion of four to one has given the greatest comfort to patients, and the best vision under all circumstances.

CONCLUSIONS.

First. Strabismus is always a symptom of some morbid or congenital defect.

Second. Success in its relief has increased in direct proportion to our knowledge of these conditions and defects.

Third. Strabismus due to opacities of the refracting media, or to congenital amblyopia, can only be treated by operations, and solely for cosmetic effect.

Fourth. Strabismus due to the combined action of hyperopia and normal recti is treated by tenotomy or advancement, atropine mydriasis, suitable glasses, and gymanstic or innervation exercises.

Fifth. Strabismus due to hyperopia alone is treated by the use of glasses fully correcting the flatness of the eyeballs, and by atropine mydriasis.

Sixth. Binocular vision is to be sought for in all cases other than those due to the opacities of the refracting media, congenital amblyopia, or organic disease of the retina or optic nerve. With sufficient perseverence, it is attainable in a fair proportion of cases.

Seventh. Recent studies of heterophorias afforded sub-

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stantial aid in the better management of squint by the new standards of both operative and gymnastic work, by the more convenient and reliable instruments for examination, and finer ones for operation.

Eighth. There yet remains a number of cases of squint not explicable by our present knowledge, or amenable to treatment by accepted methods. To bring these under definite law, both as to cause and management, remains for the student of ophthalmology.

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NEURO-RETINITIS WITH SPECIAL REFERENCE TO THE MONOCULAR VARIETY,

WITH REPORT OF CASES.

A. E. BULSON, M. D.
Jackson, Mich.

An inflammation of the optic nerve may develop at any spot along the entire course of the nerve. To be visible, it must be situated in the optic papilla, and then only by the aid of the ophthalmoscope can we see it. In such cases as can not be seen by the ophthalmoscope, but present symptoms which may be considered at least characteristic of an inflammation situated farther back, we would pronounce it "retro-bulbar neuritis." (Von Graefe.) Simple hyperæmia of the optic nerve is of frequent occurrence, and is a constant accompaniment of all inflammations of the retina.

When an inflammation of the retina becomes so extensive as to involve and include the optic nerve or, vice versa, when an inflammation of the optic papilla has extended so far as to include a pronounced area of the retina, we have then a clear picture of "neuro-retinitis."

The two forms of neuritis are not so widely separated as we have been led to suppose, since numerous transitional forms occur between choked disc and descending neuritis.

The theory advanced by Schmidt-Mans, that choked disc could readily be accounted for by reason of simple mechanical engorgment, has been questioned by our leading oculists; but the fact, I believe, remains unchanged, that the process of

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simple hyperæmia acts as an important factor in the development of congestive neuro-retinitis.

In the monocular variety I think the greater per cent. are of this character, though I have not the statistics to bear me out in this statement.

Facts are numerous and settled regarding the intimate relation existing between central diseases of the brain and disturbances of the eye, and, in the majority of cases of optic neuritis, central brain disturbance is the direct cause.

In these lesions of central origin, engorgement of the nerve is produced by an elevation of pressure within the cranial cavity, as from brain tumors, meningitis, syphilis, and the whole class of exanthematous diseases; also by disturbance of nutrition of various kinds, among which I may enumerate uræmia, diabetes, tubercular meningitis, leucocythæmia, etc. In these cases we have a direct transmission from the brain disturbance to the optic nerve.

In every case in which there is even a suspicion of cerebral disease it is needless to say that the fundus of the eye should be examined with the ophthalmoscope.

This is particularly important, as choked disc may be present, but not manifest by any disturbance of the vision. Various authors explain this by assuming that, in choked disc, there is simply a state of œdema. This may go on, however, and produce compression of the nerve fibres, and ultimately great impairment of vision.

The degree of compression cannot be determined by ophthalmoscopic examination.

In some cases the blindness does not appear until there is commencing atrophy of the optic nerve. Then it becomes rapidly manifest.

The latter condition was very noticeable in a case that came to my notice two years ago, which I shall report with others in this paper.

Von Graefe mentions the fact that, in some cases of progressive neuro-retinitis, all ophthalmoscopic changes are want-

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ing, with the exception, perhaps, that the arteries are smaller in size, blindness being sudden, in connection with atrophy, and then only after many weeks. In this condition we look for the cause to be in the optic nerve in its extra bulbar course, to which he applied the term, "retrobulbar neutritis."

This latter variety is manifest in two forms, acute and chronic.

The acute form is marked by the suddenness of the attack, and the great disturbance of vision from the first.

The failure of sight is governed by the character and intensity of the inflammation of the nerve. In severe cases even perception of light may be lost in a few days, when, to external appearances, the eye may appear normal, with the exception, perhaps, of dilatation of the pupil.

The exciting cause in the acute form may be from lead poisoning, suppression of the menses, the glare of electric light, sudden cold, etc.

In some cases it is impossible to demonstrate the cause of the sudden blindness.

Nettleship describes the above as general causes of amblyopia, and the rule is that only one eye is attacked.

I think a large per cent. are monocular in this acute form. It is the rule that recovery takes place in this form of neuro-retinitis. Prompt and vigorous treatment must be instituted to insure the most favorable results.

Hirschburg reports a case, in a boy of seven years, where blindness was sudden, that showed gradual improvement in the first week after the commencement of treatment.

Many other cases might be mentioned where neuro-retinitis of one or both eyes has been successfully treated in the beginning of the attack. I refer directly to the acute form, where there is no central lesion.

In the chronic form of neuro-retinitis we have a very different state of things confronting us.

The exciting causes are usually central, and slow of development. In fact, the disturbance of vision may be so gradual

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that it is often difficult for the patient to even tell when the first noticeable change took place; but, in the majority of cases, the reduction in visual acuity marches steadily on until there appears a troublesome mist or cloud, which continues to grow darker until the vision is shut out.

This is particularly true of tobacco amblyopia, where the failure of vision may have been almost unrecognized for many months, or until rapid degeneration of the retina takes place as a secondary affection, when the failure of vision is rapid.

I call to mind four cases of this character that have occurred in my own practice during the last two years, and I have five other cases under observation at the present time.

In three of these cases, the first indication of the change was monocular, while in the other six the visual failure was binocular from the first.

It is needless to say that in well marked cases of neuro-retinitis, with pronounced pallor of the papilla and threadlike vessels, indicating profound implication of the retina, the field of vision is very much reduced early in the disease.

This is noticeable also in the field for colors, and, in fact, I have noticed the defect in the color field among the first symptoms of neuro-retinitis.

It is not my purpose in this paper to give the pathology of the various forms of neuro-retinitis, but the general history of the disease, and report of cases as they have come under my observation.

REPORT OF CASES.

CASE I. Mr. C. S. L., age forty-three, by occupation railroad conductor, consulted me on August 6th, 1890, with the following history.

Has been an employee of the Michigan Central Railroad for the past twenty years. Has during this time been an inveterate user of tobacco, both chewing and smoking, but always temperate in other respects. Has no history of specific disease.

Says that about one year ago he noticed a slight failure of

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vision, more marked in O. D. He consulted an oculist at Bay City, who examined him and prescribed glasses. As the vision continued to fail, he again consulted the doctor, who told him he had neuritis, and prescribed for the same.

He continued his duties on the railroad up to July, 1890, when, by reason of rapid failure of vision, he had to quit work.

On the above date, August 6th, I made my first examination. His vision at this time was, O. D. $\frac{2}{200}$, O. S. $\frac{20}{50}$.

The external appearance of the left eye was normal. The right had a perceptible divergence, with pupil slightly dilated.

The ophthalmoscopic examination showed in O. D. a very extensive and progressive neuro-retinitis.

The disk was round and pale, but the margin not well defined. The central artery was small, and as it extended over the retina became threadlike, and in places wholly obliterated.

The veins were quite large and tortuous. In numerous portions of the fundus were seen white patches, more marked on the nasal side. Numerous choroidal changes were seen over the entire field.

In the left eye, the disc was hazy and not well defined. It appeared pale, and the arteries smaller than normal.

The retina was simply hyperæmic, and the veins larger than normal. At no time has he suffered from pain in either eye. The patellar reflex was absent entirely in both legs. No other symptoms of central lesion present.

The treatment was strychnia and iodide of potassium, and general hygienic regulation.

The discontinuance of tobacco was insisted upon from the first. The first three months of treatment there seemed to be an improvement in the vision and appearance of O. S. from $\frac{20}{50}$ in August to $\frac{20}{30}$ in December following.

There was no improvement in O. D.

The treatment was continued essentially the same, with the addition of electricity, up to July, when the patient took

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a trip to the cooler climate of the northern section of our state.

While away only about four weeks he noticed a rapid failure of vision in O. S.

After his return the examination showed vision O. S. $\frac{20}{200}$, and only perception of light in O. D.

From this time, the failure of vision was rapid, and he soon became practically blind.

The termination of this case, which was sad in the extreme, simply illustrates the tendency to rapid degeneration of nerve tissue and total blindness in a very short period of neuro-retinitis.

CASE II. Miss M. H., age twenty-seven, applied to me January 28th, 1894, with the following history.

She has taught school the past eight years, and has enjoyed the best of health up to three weeks ago.

At the present time she complains of constant headache, and pain through the eyes and temples caused, she thinks, by the loss of sleep during the sickness and death of a sister. In addition to this, she has taught her department in school daily. The functions of the body are normal.

The last week she has noticed a marked diminution of vision and blurring, in the left eye, and is greatly alarmed about it.

On examination I found the vision in O. D. $\frac{20}{30}$, O. S. $\frac{20}{200}$.

The fundus of the right eye showed simply slight hyperæmia. The left showed extensive neuro-retinitis, with swelling and indistinct papilla, involving the whole field of retina. On the upper and nasal side of the field were many small hemorrhagic flame-shaped spots. The arteries that were to be seen were small, and circulation was evidently much diminished. The veins were more prominent, full, and tortuous. Urine examined with negative results.

The treatment of this case consisted in absolute rest of the eyes, the use of a mydriatic, iodide of potassium and tonics, with open air exercise, and protection of the eye from light. In

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four weeks time the condition of the eye was so much improved that the vision was $\frac{20}{50}$. In six weeks more, ten weeks from the beginning of treatment, she resumed her position in school, abstaining entirely from the use of the eyes at the near point.

The visual acuity steadily increased so that in three months the eyes were examined for glasses with the following results. (Dr. Casey Wood's Hom. Atropine discs were used):

The vision at this time was O. D. $\frac{20}{20}$, O. S. $\frac{20}{30}$. One diopter of hypermetropia was found in O. D. and one diopter of hypermetropic astigmatism in O. S. vertical meridian. There has been no further difficulty with the eyes up to this date.

CASE III. Miss K. B., age twenty, was first seen November 27th, 1894. She complained of constant headache, and the last ten days rapid failure in O. S.

The general health has always been poor; has never menstruated regularly, at which times the flow is scanty and unnatural in color. Complains of pain in the back, and the bowels are always constipated. The urine is excessive in quantity, having to void the same two or three times during the night. Examination; specific gravity 1012, and neutral. Has spells of vertigo and faintness. The examination showed her vision O. D. $\frac{20}{30}$, O. S. $\frac{20}{200}$.

The optic papilla of left eye was yellowish white, large, and swollen, the borders obscured, the arteries threadlike and in places wholly obliterated. The whole fundus showed marked symptoms of neuro-retinitis, and on the temporal side were small patches of choroidal changes.

The fundus of the right eye was normal in general appearance.

The constitutional condition was most unfavorable, being that of well-established chlorosis, which was undoubtedly the primary cause of her eye trouble.

The case was under my immediate care for one month, when she returned to her home and the care of Dr. C. W.

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Harris, of Hillsdale, who has carried out the general plan of treatment first suggested.

Through correspondence, Dr. Harris states that there has been a perceptible improvement in the physical condition, and a decided improvement in the vision of O. S., being at this time $\frac{20}{50}$, and O. D. $\frac{20}{20}$. From present indications I have no doubt but that in a short time the vision and general health will be fully restored. (This case came to my notice May 20th, and her vision and general health were nearly normal.)

CASE IV. Mr. C. S., age thirty-three, by occupation a painter; was first seen April 5th, 1893, and gives the following history. His general health has been good, although he is not physically strong. Does not claim to be strictly temperate, but uses tobacco and alcoholic stimulants in moderation. Denies ever having had specific disease, and gives no record of constitutional dyscrasia in the family.

Says he lost left eye when a boy. The right eye has always been good up to one week ago, when he noticed a rapidly increasing failure of vision, with pain through the eye and temple. As a consequence he was obliged to discontinue his work as a house painter.

The ophthalmoscope showed a vision O. D. $\frac{20}{100}$, O. S. $\frac{12}{200}$, and divergent. The fundus of O. S. presented the appearance of a well-marked case of neuro-retinitis. The disc was swollen, outlines indistinct, and arteries small. The color was yellowish white. The whole field of the retina was intensely engorged, and dotted with hemorrhagic spots.

I think there is no doubt but that the occupation of this man (painting the outsides of buildings, with the intense glare of the sun reflected into his eyes) was certainly sufficient cause for his neuro-retinitis.

The treatment was absolute rest of eyes, full mydriasis, and iodide of potassium. The recovery was complete after three months.

CASE V. Mr. D. A. Y., age forty, American, by occupation a merchant, was first seen October 1st, 1894. Com-

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plained of slight failure of vision, and thought he needed glasses.

His general health has never been good. The past few months he has been very anxious regarding his wife's health, and thinks this has had a decidedly depressing effect upon him.

Left eye was injured when a small boy, resulting in great impairment of the vision.

At this examination his vision was in O. D. $\frac{20}{30}$, and in O. S. $\frac{20}{200}$.

The disc of O. D. was slightly hyperæmic, and accepted a +D 1.00 lens, with plano in O. S. There was nothing to indicate, at this time, an attack of neuro-retinitis. October 20th, patient again called and stated that he had noticed a decided failure in the vision of the right eye. Has constant blurring, and cannot use his glasses with any degree of comfort.

The vision in O. D. was now only $\frac{20}{200}$, but in O. S. it had apparently increased to $\frac{20}{100}$.

The ophthalmoscope showed in O. D. a choked, hazy papilla, slightly swollen, and the borders obscured.

Small flame-shaped hemorrhagic spots were seen in numerous portions of the fundus. The arteries were small and in places obscured. The veins were full and tortuous, giving us a picture of a well defined case of monocular neuro-retinitis.

The left eye did not appear to share in the inflammatory process, and the visual power seemed to increase.

I think, however, this was more on account of the failure of vision in the previously good eye, and the extra demands upon the left.

Examination of the urine disclosed nothing abnormal.

The treatment was iodide of potassium, tonics, rest of the eye, and plenty of out-door exercise, with eye excluded from light. On November 13th, vision was $\frac{20}{100}$ in O. D., with marked amelioration of the inflammatory symptoms, and the eye appeared much less sensitive to light.

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CASE VI. Mr. J. A. B., of Charlotte, Michigan, age fifty-seven, by occupation blacksmith.

Was first seen November 20th, 1894, with the following history: Says his general health has always been good, with no history of specific trouble. His vision commenced to fail in O. D. about two years ago, and in the left about six months ago. Thinks the glare of light from his forge was the cause. Has used colored glasses to protect his eyes when at work, notwithstanding which he has discovered a rapid decline of his vision, and sought many opticians for glasses, but could get none that improved his sight.

The examination showed vision in O. D. $\frac{10}{200}$, in O. S. $\frac{2}{400}$. By the ophthalmoscope, in O. D. the optic nerve had a bluish white look, with small, threadlike arteries. The retina was pale in patches, with numerous choroidal changes over the field, presenting a clear picture of progressive nerve atrophy, as a result of acute neuro-retinitis.

In O. S., the fundus appeared as usual in acute neuro-retinitis, with choked disc and hemorrhagic spots in numerous places over the whole surface of the retina. Ordered potassium iodide and strychnia, and directed him to leave off work and exposure to the light in his shop, which, I believe, was the only traceable cause of the difficulty.

When last heard from, in December last, there had been no material change for the better.

CASE VII. Mr. M. F., age thirty-eight, Jackson, Michigan. First seen September 24th, 1890, and gave the following history.

Is employed as conductor on the Michigan Central Railroad. General health has always been good. No hereditary disease in his family, and no record of ever having had specific trouble. Has been an inveterate user of tobacco, but not addicted to excesses in other directions.

Has had weak eyes from childhood. The left eye has been practically blind from an injury received when about ten years of age, with divergence of the eye.

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At the present time, he complains of rapid failure of vision in O. D., particularly during the last three months, and thinks he should have glasses adjusted. Says he has had no pain, nor has he suffered in any manner, except from blurring of vision.

The examination showed his vision at this time to be, O. D. $\frac{20}{50}$, O. S. $\frac{8}{200}$.

By the ophthalmoscope, the right papilla appeared considerably enlarged and without definite outline. It had a grayish white color, extending well into the retina. The central arteries were small and indistinct as they spread over the adjoining retina.

The retinal veins were large and tortuous.

Left eye. The media were clear. By the ophthalmoscope, the nerve appeared small and pale, the arteries threadlike. A small patch of retina on the temporal side had separated, with marked retinal and choroidal changes throughout the entire field.

This was undoubtedly the result of the injury to the eye when a small boy.

The iodides and mercury were prescribed, and absolute rest directed for the eyes. Mydriatics were used, guarding against the occurrence of a glaucomatous symptom.

The case was under my care up to July, 1891, when I referred him to Dr. Carrow of Ann Arbor, who verified the diagnosis and treatment.

For the first eight months there was little or no change in the condition of the right eye. About this time there commenced a rapid failure of vision, which was soon lost entirely.

The failure of sight in this case was without doubt caused by chronic tobacco poisoning, notwithstanding this article was prohibited entirely from the beginning of the treatment.

One remarkable condition that I would note is that in the left eye (the one hurt when a small boy), the visual power rapidly increased, so that by the aid of + D 250 he had $\frac{20}{200}$ vision.

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I am not prepared to say that this increase of vision was due to actual building up of nerve fibre, nor would I say that it was because of the total failure in the right eye, and the extra demands, etc.

One thing is very evident in this case, and that is, his neuro-retinitis was confied wholly to the right eye.

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DISCUSSION OF THE PRECEDING PAPERS.

DR. D. B. CORNELL, Saginaw. I have been very much interested in the papers this afternoon. A great deal of attention has been paid to aural and ophthalmic cases. I think if there is any department of medicine to which the general practitioner fails to give proper attention, it is aural cases especially. It is quite a frequent thing for the general practitioner to say, after scarlet fever, or in chronic catarrhal conditions of the middle ear, "Let that run for a short time; that will come out all right." It is very true that many cases following scarlet fever do come out all right, the hearing being restored; and this leads a great many practitioners to be careless in this respect. I have had some physicians who regularly send me their eye and ear work, to whom I have spoken regarding certain cases who have got tired waiting, as to why they did so. The reply was that so many of these cases got better that they rather feared for their reputation if they should send them away, and the patient did not happen to come, and they would rather let them run for a short time. In that way I believe there are today a great many cases of incurable deafness, which might have had their hearing preserved.

I would differ with Dr. Strangways to a certain extent in regard to the etiology of certain cases of trouble in the middle ear. I do not object to the stress he laid upon nasal and naso-pharyngeal causes, and adenoid growths should be removed wherever they appear; there is no question about that. But there are undoubtedly quite a few cases of middle ear trouble due to certain peculiar neuroses.

DR. STRANGWAYS. I allowed one-third for that. Two-thirds I charged to nasal and naso-pharyngeal trouble.

DR. CORNELL. I did not notice that. I thought you made

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very light of strumous causes, that you were doubtful whether they had much influence.

DR. STRANGWAYS. I admit a few, but very few.

DR. CORNELL. I have a case at the present time, which has all the appearance of chronic catarrhal trouble, with a considerable diminution in hearing distance. The improvement by ordinary methods of treatment has been slow; has not been as satisfactory as we could expect. Taking the history of the case, I find from the time the child was about four years of age she has had rheumatism, and during the last four or five years she has had localized congestions, one case on her leg. The irritation caused a good deal of thickening of the tissues. By treatment by her family physician that got better. The girl is now fourteen years of age. During the last two years, when her mother has attempted to wash her ears, being as careful as possible, her ears redden up and remain so for a long time. In this case I have no doubt but that the rheumatic condition has a wonderful influence in producing localized congestions in the middle ear at the present time.

I was especially pleased with Dr. Connor's paper, and also with the papers of Dr. Bulson and Dr. Greene. I have not had as serious cases as Dr. Greene reported, but that many cases of mastoid disease are overlooked I have no doubt.

DR. GREENE. The facts which I have reported in my paper may lead you to think that I operate on a very great per cent. of my cases. I do not. I operate on more than a great many do, because I find the cases to operate upon. I operate upon a greater per cent. of my cases, I presume, than do a great many aurists, but I assure you I have known repeatedly of deaths from mastoid disease, where I have had the opportunity of making post-mortem examinations, where the cause of death was attributed to some other disease. How frequently we hear the general practitioner say, or the family say, that the doctor said "she had a fever, and it finally went to her brain and caused her death." In some of

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these cases I had previously diagnosed suppuration of the mastoid cells, following acute otitis media, and advised operation. In other of these cases there had been a chronic discharge from the ear, and evidence of mastoid suppuration. The statement that the fever went to the brain was, in a degree, correct, for some of them died of meningitis, but the trouble with the diagnosis was that they failed to recognize the cause of the fever. I would not have it understood that I operate on every case, but I think I see an unusually large number of ear cases, because it has come to be believed that I am especially an aurist, and that sends me many cases. The fact that I have done many operations of which people have known and heard naturally sends me operative cases. This is the only explanation I can give for having had so many operative cases, and having done so many mastoid operations.

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AN ANALYSIS OF TWENTY-FIVE CASES OF APPENDICITIS.

SCHUYLER C. GRAVES, M. D.,
Grand Rapids.

Mr. Chairman and Gentlemen.

In the presentation to this section of the analysis which is to follow, I do not lay claim to any startling discovery; neither do I assume any originality of purpose or execution.

I simply bring my tribute to lay at the feet of these surgical Gamaliels, with the distinct intention of allowing it to speak for itself.

I wish that my failures were fewer and my successes more frequent, but they are as they are, and cannot be altered.

We need to learn of our successes in the practice of surgery; but we need far more to learn of our failures, and in the discussion of a disease so fraught with danger and death to our fellow-creatures as is appendicitis, it becomes all important to accurately note the results following each and every form of treatment suggested for the management of this most crafty and formidable malady.

The twenty-five cases of appendicitis tabulated in this report were personal cases, and do not include any seen in the practice of other operators.

I have arranged the analysis under fourteen different headings, as follows.

1. Number. 2. Name. 3. Date. 4. Age. 5. Sex. 6. Residence. 7. Temperature. 8. Pulse. 9. Condition of abdomen. 10. Variety. 11. How long sick. 12. How treated. 13. State of appendix. 14. Results and remarks.

The cases number twenty-five, and were seen between March 28, 1890 and April 16, 1895. Twenty-two were of the acute variety, while three were chronic.

In regard to ages, the youngest was seven and the oldest fifty-three, the average being something over twenty-one, (twenty-one and three-fifths.)

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Fifteen were males, and ten females.

The temperature was below normal in two cases, normal in two, and above normal in twenty-one; the lowest range marking the 96° F. point, and the highest 104° F.

The pulse was normal in three cases, and above normal in twenty-two. Lowest rate, eighty; highest, one hundred and sixty-five.

There was no distension of the abdomen in fifteen cases. The same was moderately distended in eight, and greatly distended in only two.

Of the twenty-two acute cases, seventeen were supurative in character, and only five were non-suppurative. Nine were of the protective variety, and eight of the non-protective; four were in collapse, and thirteen not in collapse.

Of the three chronic cases, one was suppurative, and two were non-suppurative.

The shortest period of time between the onset of the disease and death or operation, in the acute cases, was two days; the longest, fourteen days.

In the chronic cases, the shortest period was two years, and the longest seven years.

As to treatment, two of the acute cases were not interfered with, because their condition was hopeless from general septic peritonitis resulting from perforation.

Nine cases were treated on the expectant plan, three of them declining the offer of operative relief. Of these three, two died, the third recovering by penetration into the bowel and escape of pus.

Eleven were operated upon, two by simple incision and drainage, without entering the peritoneal cavity; and nine by laparotomy, *with* penetration into this cavity.

Of the chronic cases, all three were operated upon, one by simple incision, and the other two by abdominal section.

Out of a total of fourteen operated cases, the appendix was not found in the three treated by simple incision. In the

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remaining eleven, and also in the two cases which were so hopeless as to forbid operation, the organ was found. (In the latter, post-mortem.)

It was associated with pus in nine of these thirteen cases. Suppuration had evidently been present in one of the remaining number. But three cases, acute and chronic, presented no evidence of present or past suppuration. One of these cases was a sero appendicitis; another was caused by an acute angulation of the appendix; while the third manifested its symptoms as a result of the presence of a large fæcal concrement one and one-half inches long.

In eight of the nine suppurative cases the appendix was gangrenous and perforated. A stone was found in three of the thirteen cases, in each instance being composed of hardened fæcal matter. In another case liquid fæces were seen escaping from the ruptured appendix.

Stones may, however, have slipped away from perforated appendices in other cases, and been washed out with the irrigating fluid.

The appendix varied in this series from one to five inches in length, and in the majority of instances lay at the head of the cæcum.

In several cases, however, it extended into the pelvis; in one, coiled like a snail, it was attached to the outer surface of the cæcum; in another it lay directly behind that viscus; and in a third was attached by its tip to the bladder, producing decided vesical symptoms.

In all the suppurative cases it was more or less adherent to the bowels and surrounding structures.

In the non-suppurative cases treated by laparotomy, the incision was closed without irrigation or drainage, while all the suppurative cases were subjected to irrigation and drainage by glass tubes and gauze.

MORTALITY.

Of the twenty-two acute cases eleven were not operated upon and eleven were. Of the former, four died, making

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36.3 per cent. Of the latter, five died, making 45.4 per cent.

Two of these deaths were certainly unavoidable, and should not be placed on the operative side of the question, because the patients were in collapse when operated upon. They were victims sacrificed upon the altar of "the medical or so-called expectant plan of treatment."

With this just change in the data we have three deaths in nine operated cases, or 33.3 per cent., and six deaths in thirteen medically treated cases, or 46.1 per cent.

The three deaths that occurred in the nine hopeful, and in a sense, legitimate operative cases, were as follows. The first case died of pyæmia, five weeks *post operationem*, from the presence of an abscess which was not discovered at the time the laparotomy was done; the second, from septic peritonitis, in four days. This was a case of right pyo-salpinx plus appendicitis; but the writer, with the laudable desire of curing the patient of two difficulties, proceeded, after the completion of a non-suppurative appendicectomy, to enucleate the pus tube, ruptured the same, and set free a colony of streptococci which, in spite of thorough irrigation and drainage, got in their deadly work four days later. The third died of broncho-pneumonia, very rapidly, after five well-nigh perfect days following his operation for suppurative and perforative appendicitis.

This man, fifty-three years of age (case No. 25), two days before he had had any pain, and while in a state of perfect health, predicted his death within a short time.

After the appendicectomy, his pulse in thirty-six hours dropped from 150 to 80, and his temperature from 101.8° to to 99°. His bowels moved regularly, the delirium gave place to perfect consciousness, the appetite returned, and his prospects were excellent; but he still insisted upon the fact that he would die. On the sixth day from that of the operation, he complained of cold feet; his temperature and pulse began to rise; he commenced coughing; large crackling rales could be heard all over the house; delirium supervened; cyanosis

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developed; and in thirty-six hours more the patient was a corpse.

This, to me, was a most remarkable case.

Of the three chronic cases, all of which were operated upon, two recovered and one died. The cause of death in this case was intestinal obstruction, due to encroachment upon the ileum, about four inches from the ileo-cæcal valve, of inflammatory exudate thrown out by innumerable attacks of recurrent appendicitis. The caliber of the bowel had for years, been gradually narrowed, and I now believe that the symptoms presented by the boy (case No. 10) were due more to the intestinal obstruction than to the condition of the appendix, although the latter was badly adherent and diseased. Enterotomy was done on the day following the operation, but it was too late. I believe that the use of the Murphy buttton would have saved this life, had we recognized the full nature of the case prior to operation.

The mortality in both acute and chronic cases is follows: four deaths in twelve operative cases, or 33.3 per cent; six deaths in thirteen medically treated cases, or 46.1 per cent., being the same result as in the acute cases alone.

Finally, the deaths due directly to the operation of appendicectomy were none. Those due to diseases other than appendicitis were two (out of twenty-five), or 8 per cent., and those due to the disease under discussion, eight, or 32 per cent.

This leaves a balance of fifteen cases, or 60 per cent., that recovered, seven, or 28 per cent., without operation of any kind; eight, or 32 per cent, *with* operation. Of these eight, three, or 12 per cent., were subjected to simple incision, and five, or 20 per cent., to laparotomy.

Of the 100 per cent., which represents this series of cases, 28 per cent. stands for recoveries without operation; 32 per cent. for recoveries with operation; 8 per cent. for deaths due to intercurrent maladies; and 32 per cent. for deaths due to the disease alone.

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No	Name.	Date.	Age	Sex.	Residence.	Temp.	Pulse.	Condition of Abdomen.	Variety.
1	B. J..	March 28, 1890	7	F.	City	97°	150	Greatly distended..	Ac. sup. with gen'l peritonitis and collapse...
2	S. M..	Apr. 21, 1890..	18	M.	City	100°	130	Distended .	Ac. sup. with gen'l peritonitis and collapse...
3	E. K.	June 2, 1890..	32	M.	City	101°	100	Not dist'd..	Chronic sup. and protective.
4	W.H..	Feb. 24, 1891..	28	M.	City	101°	100	Not dist'd..	Ac. sup. and protective .....
5	E. B..	Oct. 16, 1891..	16	F.	City	104°	112	Not dist'd..	Ac. sup. and ulcerative ....
6	C. L..	July 7, 1893...	27	M.	City	103°	120	Distended .	Ac. sup.....
7	C. S..	Dec. 9, 1893..	15	M.	City	101.5°	108	Not dist'd..	Acute non-sup.
8	C. B..	Feb. 13, 1894..	25	M.	Allegan ...	98.6°	80	Not dist'd..	Chronic recurrent, non-sup..
9	A. B..	July 13, 1894..	14	M.	Lisbon	102°	110	Not dist'd..	Ac. sup. and protective .....
10	L. H..	July 21, 1894..	17	M	City	99°	90	Not dist'd..	Chronic recurrent, non-sup..
11	C. D..	July 25, 1894..	18	M.	Fennville..	102°	120	Somewhat dist'd.....	Ac sup. and protective .....
12	A. E..	Aug. 8, 1894..	27	F.	City	99°	150	Not dist'd..	Ac. sup. gen'l p. and collapse
13	F. S...	Aug. 18, 1894.	15	F.	Freeport ..	102°	110	Somewhat dist'd.....	Ac. sup. with gen'l peritonitis
14	J. B...	Sept. 25, 1894.	19	F.	City	101°	110	Not dist'd..	Acute non-sup.
15	N. J...	Mar. 26, 1894.	17	F.	Holland...	101.6°	108	Not dist'd..	Ac. sup. and protective .....
16	G. F..	Jan. 9, 1895...	20	M.	City	ax. temp 100.8°	146	Somewhat dist'd.....	Ac. sup.....
17	A. W..	Feb. 12, 1895..	22	F.	City	98°	85	Not dist'd..	Ac. non-sup...
18	L. W..	Feb. 19, 1895..	24	F.	City	99° 101.6°	100 120	Somewhat dist'd.....	Ac. sup. and protective .....
19	A. T..	Feb. 25, 1895..	31	F.	City	99° 102°	90	Somewhat dist'd.....	Ac. non-sup. serous .....
20	G. B..	Feb. 26, 1895..	17	M.	Sparta	96°	165	Greatly dist'd.....	Ac. sup. with gen'l peritonitis and collapse...
21	C. B..	Mar. 24, 1895.	15	M.	City	100° 102°	108	Not dist'd..	Ac. sup. and prptective ....
22	A. K..	Mar. 25, 1895.	23	M.	Holland...	101.8°	84	Not dist'd..	Ac. sup. and protective ....
23	G. S...	Apr. 14, 1895..	12	M.	City	101°	100	Not dist'd..	Ac. sup. and protective ....
24	N. P..	Apr. 15, 1895..	33	F.	City	102°	110	Somewhat dist'd.....	Ac. non-sup...
25	J. D...	Apr. 16, 1895..	53	M.	City	101.8°	140	Somewhat dist'd.....	Ac. sup. and protective ....

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How Long Sick.	How Treated.	State of Appendix.	Results and Remarks.
6 days....	Non-interference ..	Gangrenous and perforated in three places. (Observed post-mortem	D. Pelvis full of pus.
8 days...	Laparotomy	End Sloughed off.....	D. In 36 hours; fæcal stone found.
1 year....	Simple incisi'n and drainage	Not found.....	R. Pus was discharging insufficiently from bladder prior to operation.
10 days...	Incision on outer aspect and low'r 3d of right thigh with drainage	Not found.....	R. ....
3 days...	Laparotomy.....	Ulcerated in mucosa, not perforated....	D. In five weeks from pyæmia, due to the overlooking of an abscess present.
3 days...	Expectancy	.....	R. .....
1 day....	Expectancy	.....	R. .....
2 years...	Laparotomy	Angulated	R. Had three attacks.
7 days...	Expectancy	.....	R. Parents declined operation and boy recovered by rectal perforati'n and discharge of pus.
7 years...	Laparotomy.....	Adherent to everything and contained a fæcal concrement.	D. In 36 hrs. from intestinal obstruction; had about 80 attacks.
14 days...	Expectancy	....	R. Rupture into bowel with discharge of pus.
6 days...	Non-interference ..	Gangrenous and perforated....	D. In 48 hrs.; pelvis full of pus; had been no local pain.
4 days...	Expectancy	.....	D. Parents refused operation; no post-mortem.
5 days...	Expectancy	.....	R. ....
3 months.	Simple incisi'n and drainage	Not found.....	R. Had had three attacks; the last persisting for two weeks.
10 days...	Expectancy	.....	D. Parents refused operation.
4 days...	Expectancy	.....	R. .....
5 days...	Laparotomy	Adherent to exterior surface of cæcum, gangrenous, perforated and emitting fæcal matter....	R. .....
10 days...	Laparotomy	Deeply injected on serous surface. Adher'nt to end of cæcum and coiled like a snail	R. .....
2½ days..	Laparotomy	Gangrenous and perforated; adherent to under surface of cæcum; belly full of pus....	D. In six hours.
2½ days..	Laparotomy	Grngrenous and perforat'd in 3 places; universally adherent and entending into the pelvis..	R. Complained much of pain in bladder prior to operation.
5 days...	Laparotomy	Gangrenous and perforated; adherent and extend'g into pelvis	R. .....
8 days...	Expectancy	.....	R. Abscess burst into bowel with subsidence of symptoms and signs.
14 days...	Laparotomy	Injected and contained a fæcal concrement 1½ inches long....	D. From septic peritonitis resulting from rupture of pus tube during operation.
2 days...	Laparotomy	Inflamed and perforat'd at base	D. Six days later from grippe, broncho-pneumonia, and not the operation.

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ABDOMINAL NEPHRECTOMY, WITH REPORT OF A CASE.

REUBEN PETERSON, M. D.
Grand Rapids.

Operations for the removal of a kidney are not of such frequent occurrence as to inhibit reports of single cases; for this reason, I have thought the following might be of interest.

Miss A. C., American, aged twenty-two years, single, house-maid. Family history negative, except that she thinks her father died of some kidney trouble. When eight years of age she fell and sustained an injury to her right side which kept her in bed for two weeks; since then she has always had more or less pain in that side, usually dull, but occasionally so severe as to confine her to bed. As she grew older the pain became more severe and more disabling. She first noticed blood in her urine at the age of nine, and this appearance was of almost daily occurrence thereafter until her eighteenth year, since which time it has been observed only during attacks of pain. About two years ago she had quite a severe seizure in the right side, accompanied by a cessation of menstruation. Dr. Murphy, of Chicago, diagnosed the trouble as cystic disease of the kidney, from a lump situated just at the border of the right ribs. (The patient had noticed this tumor for six years.) Some fluid was drawn off, and an operation advised. After this she was laid up for some time with severe pain and fever. Next she went to St. Joseph's hospital, where she was under the care of Dr. Senn, but he could find no evidences of cystic kidney. Then Dr. Henrotin was consulted, who made a vaginal examination,

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and found a cyst of the right ovary which he removed by cœliotomy. She made a good recovery from the operation; but the pain in the right side still continued, and was so severe in character as to prevent her from working. At times the urine contained considerable blood.

Examination, made September 26th, 1894, gave no evidences of cystic kidney, but there was some tenderness in the right vaginal fornix which was considered to be due to the stump of the excised right tube and ovary. Accordingly she was sent to the Butterworth Hospital, and there treated locally with ichthyol tampons for over two months, during which time the urine showed no evidences of any kidney trouble, the amount passed being about normal. She gained in flesh and strength, color and appetite improved, but the pain in the right side still persisted. After consultation with Dr. Eugene Boise, it was determined to make an exploratory cœliotomy for the purpose of ascertaining the cause of the suffering; the question of possible chronic appendicitis was discussed, as the pain was located in the region of the appendix. It was suspected that there was either trouble with the kidney or the appendix, or adhesions from the previous cœliotomy.

Assisted by Dr. Boise, I operated December 3d. An incision was made three inches in length in the right linea semilunaris over the region of the appendix, which was found to be perfectly normal. The stump of the excised right tube and ovary was next examined, and nothing abnormal was found in connection therewith; no ligature was present. A systematic examination of the entire abdominal contents was then made, which resulted in the discovery, beneath the peritoneum and in the region of the right kidney, of a fluctuating tumor. The left kidney was palpated and found to be apparently normal. The peritoneum was cut through over the center of the tumor until a blue, glistening cyst-wall was disclosed. The tumor was then carefully dissected from its bed, which proved to be a most difficult and delicate task be-

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cause of the thinness of the wall and the density of the adhesions. The kidney was finally cleared in all directions, except the pedicle made up of the ureter and renal vessels. The ureter was isolated and cut midway between the silk ligatures which were applied. One large silk ligature was placed around both artery and vein. Forceps were then placed close to the kidney, and the mass removed. The stump was dropped and the peritoneum allowed to settle over it, no stitches being used. The abdomen was not irrigated, but little hemorrhage having taken place. No drainage was used. The parietal peritoneum was sutured with catgut, the fascia with interrupted silkworm gut sutures, and the muscles with catgut. Catgut was also used for the skin. The patient suffered very little from shock, the operation lasting a little over an hour. She made an uninterrupted recovery. The stitches were removed on the ninth day, and the wound was found to have healed by first intention.

The patient is now free from pain and able to do light work. The urine was examined carefully after the operation. About the normal amount was passed in the twenty-four hours, showing that one kidney was able to do all the work.

Pathological report by Dr. J. B. Whinery.—The kidney at the time of removal had become changed into a fluctuating, lobulated, kidney-shaped tumor. The length was six inches, breadth four inches, weight one pound; surface smooth, and no evidences of inflammatory action. On palpation calculi ranging in size from a grain of sand to a pea or a little larger could be detected scattered through different parts of the tumor. On making an incision into the mass twelve ounces of brownish colored liquid escaped, which, however, was not subjected to chemical or microscopic examination, because the tumor had been in preserving fluid for some time and more or less osmosis had taken place. Most of the kidney structure had disappeared, and there remained only pouches separated from each other by septa of fibrous tissue, in which free calculi were found, about two dozen in all, some of a dark clay-colored appearance, others dark brown; a thin crust of crystals covered a few of the calculi. Firmly imbedded in the mouth of the ureter was a dark brown calculus the size of a hazelnut, completely occluding the lumen, and preventing the passage of urine. Of the kidney structure, only a small portion, varying in thickness from a mere shell to three-quarters of an inch, was left. Microscopical examination of this remaining kidney structure revealed atropy and a functionless condition of the secretory elements.

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Regarding the diagnosis of cystic disease of the kidney by means of the cystoscope and the use of ureteral catheters; only since Howard Kelly's work on the bladder and its accessories has it been practicable to make use of catheterization of the ureters as a means of diagnosis of disease of the kidney. By means of Kelly's instruments both ureters may easily be catheterized, and the excretion from each kidney carefully examined; great additional aid to diagnosis is thus obtained. In the case just considered, there is no doubt but that passage of a catheter into the right ureter would have shown that no fluid was coming from the corresponding kidney. The amount of fluid excreted from each kidney can be determined, and thus the surgeon can decide as to the advisability of the removal of one when the other is slightly diseased; in short, the diagnosis of surgical disease of the kidney has been placed on a scientific basis, and much more accurate and successful work may be confidently looked for in the future.

The advantages of abdominal over lumbar nephrectomy for such cases as the one reported are evident. Had the incision been made in the loin, it is doubtful if the dense adhesions could have been separated, certainly not without rupture of the cyst wall, thus materially complicating the operation. With the abdominal incision the field of operation is brought plainly into view, and the work of enucleation may be carried on both by sight and touch; and the shock attendant upon opening is offset by the greater rapidity with which the kidney can be removed. Lumbar nephrectomy, even though the peritoneal cavity be not opened, is attended usually by great shock, because of the necessary strain to which the renal vessels are subjected in bringing them into position for ligation, the operator is almost invariably at a disadvantage, no matter how extensive the incision may be. Mynter relates of a recent case that his arm was buried nearly to the elbow in attempts at enucleation. One can thus readily understand the dangers attending the ligation of the renal vessels. One

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of the chief causes of secondary hemorrhage is ligation of vessels while on the stretch, and the slipping of the ligature usually proves rapidly fatal, a difficulty that is avoided when ligation is through the abdomen. Again, dissecting-room experience teaches that anomalies in the way of blood-supply to the kidney are by no means uncommon, and these can be seen and provided for better by the abdominal route. The latter method also enables one to carefully palpate the sound kidney before removing the diseased one; for it has happened that a kidney has been removed and the post-mortem revealed the fact that, although diseased, it was the only renal organ present. The possibility of such accidents should be continually borne in mind and carefully guarded against.

Shall the cut edges of the posterior peritoneum covering the tumor be sutured? If the kidney be in its proper position, removal will leave a large hollow into which the edges of the peritoneum drop in such a way that union readily takes place; the raw surfaces left after peeling out the kidney (which is usually adherent) are covered by the peritoneum, and thus the abdominal cavity is shut off from the retroperitoneal space. And yet, while sutures can be dispensed with in some instances and no unfavorable symptoms supervene, in other cases, if there is no great amount of shock and the peritoneum not too redundant, I would certainly unite the peritoneal edges by a running catgut stitch, feeling that by so doing I had left the peritoneum in a more favorable position for speedy union than by any other method.

Drainage, as a rule, should be employed only when absolutely necessary. As applied to nephrectomy it differs from other abdominal cases in the fact that the retroperitoneal space may be drained through the loin, while the abdominal cavity can at the same time be closed without drainage; and this would seem to be the most satisfactory method to employ. Gauze is in the main preferable to rubber tubing, owing to the tendency of the latter to collapse and thus prove worthless.

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In disposing of the ureter, two ligatures should be applied and severance made between them; stitching the end of the ureter into the abdominal wound, as is the custom of some, is totally unnecessary. If the contents of the ureter are believed to be septic, the end should be cauterized; otherwise it is simply dropped after ligation and excision.

I have wondered whether the history of the injury to the right side in the case just reported could have had any influence in the production of the calculi and the subsequent development of the hydronephrosis; certainly a blow may produce a blood clot within the kidney, from which a calculus can subsequently develop.

The history of paroxysms of pain, and of hemorrhages from the bladder, would lead to the conclusion that these were induced by frequent passages of calculi along the ureter, and that finally one larger than the rest lodged in the mouth of the ureter, when hydronephrosis resulted.

In conclusion let me say that this case has taught me a valuable lesson; it is, to place more credence in the patient's statement in regard to pain, and if it be located in the abdomen, and the position be constant, to make an exploratory incision to clear up the diagnosis.

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PATHOLOGICAL LESIONS OF THE INFERIOR MAXILLARY BONE, WITH THE REPORT OF A CASE.

E. B. SMITH, M. D.
Detroit.

The strides of surgery have not alone made themselves felt in abdominal and pelvic surgery, but all along the line modernizing influence, guided by scientific methods of research, which is daily being carried on in and out of the laboratory, is placing our art where she belongs. Nowhere is charlatan prevented from working her outrageous and devilish humbug; but upon the face and about the mouth she feels that there is an untrodden field for her, and here the practical, careful, scientific surgeon can make himself felt in his calling.

I present the above subject of my paper, "Pathological Lesions of the Inferior Maxillary Bone, with the Report of a Case," because I personally think that more operative work ought to be done upon the face and within the mouth. Dr. Wyeth and others have proven the practicability of ligating the external carotid artery, and by this means controlling all hemorrhage while operating upon the face, and also a great part of the mouth. This makes operations upon these parts more of a possibility, with a better prospect of ultimate success. The great danger that stands out in ligating the common carotid, interfering with the circulation within the brain, is thus avoided, and so we can give a better prognosis of these particular cases to our patients.

The peculiarities of the external carotid are many, and

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should be kept in mind in all operations that are undertaken upon or near it. The re-establishment by anastomosis of the arterial circulation takes place with the facial by branches given off from the internal carotid, and by branches given off from the subclavian that anastomose with the occipital. This makes it possible for one to sever almost any number of arteries in an extensive dissection upon the face, without untoward effects. Gray describes the mental foramen to "be placed just below the root of the second bicuspid tooth." I have found it varying as to situation, being frequently placed below the root of the first bicuspid tooth. This would make some difference in the site chosen for the incision of the horizontal portion of the inferior maxillary. The sublingual gland sometimes stands out from the bone and makes it of easy access; at other times one sees and feels it within a well developed sublingual fossa. The sub-maxillary presents the same peculiarities in its position, but its fossa is much more often developed as described in the leading anatomies. These peculiarities must be in our mind when we expect to do the best surgical work.

In order to comprehend fully the various pathological processes to which the lower jaw is subject, we must remember the more important anatomical and histological points in connection therewith; that in the temporo-maxillary articulation there is an interarticular fibrocartilage as well as a capsular ligament, and two synovial membranes; that the bone is well supplied with blood vessels and nerves, and possesses, what is peculiar to the two maxillary bones, alveolar processes which, as well as the rest of the bones, are lined with periosteum. Now, aside from the tissues of the jaw proper, we must remember that some of the surrounding tissues and organs bear very important pathological relation to the bone itself; for instance, the salivary glands, especially the parotid, and the tissues of the gums. Perhaps one or two references regarding embryological malformations may not be out of place. Thus, a portion of the aural car-

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tilage may be misplaced in the embryo and be found in the neighborhood of the parotid gland, and, lying there dormant for a time, may afterwards start up an enchondroma of the gland that can be explained in no other way, and this often effects the jaw secondarily, on account of the proximity of this gland to the temporo-maxillary articulation. A defective union of the bronchial cleft, or a turning in of the epiblastic layers here, is sometimes the cause of pathological formations at a later date. We have in and around the jaw all the various tissues necessary for the commencement and growth of the different tumors; and the teeth, by their connection with the external world, are capable of producing the necessary irritation, or of offering a suitable entrance for infective micro-organisms.

Of all tumors attacking the jaw, the fibromata are the most common. The reason is probable that a growth of fibrous tissue is more easily induced than that of the other. For the same reason we have fibrous tissue repairing the loss of continuity of muscle, and frequently in tendon, bone, and epidermis. The fibromata may remain pure and non-malignant, or, taking on a sarcomatous element, become fibro-sarcomata. This form of tumor when once removed presents a liability of recurrence in direct ratio to the amount of sarcomatous elements it contains. Another non-malignant tumor of the jaw is the enchondroma, which, if left to itself, is very apt to ossify, but if removed thoroughly, rarely recurs. There is one form of tumor in connection with the teeth that I will call your attention to, which may, perhaps, be classed among the exostoses. I refer to those growths from the teeth, consisting of enamel or dentine, forming hard masses which may project into the mouth and be mistaken for supernumerary teeth. We also may have arising from the periodontal membrane a tumor taking on the nature of a fibroma or sarcoma. The round and the spindle celled sarcomata in connection with the jaw are intensely malignant; their liability to recurrence is very great unless the tissues are deeply removed.

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Carcinoma of the lower does not occur so often as that of the upper jaw, and when it does occur there it generally appears as an ingrowth of epithelial cells on the surface of a multilocular cyst. In connection with the sarcomata, on account of the similarity of pathological appearance, I will mention actinomycosis. The ray fungus generally obtains an entrance to the bone by means of a carious tooth, when it causes the peculiar tumor so like a sarcoma, but a microscopical examination makes the diagnosis easy, the club shaped bodies being quite characteristic, both in shape and arrangement. Of the cysts occuring in the jaw I will mention two. The dentigerous cyst occurring in early childhood, the result of the malformation of a tooth and consequent non-penetration, results in the accumulation of serum, forming a fluctuating tumor, the diagnosis of which is generally easy. The other form, subperiosteal cyst, may appear at any age, generally in connection with carious teeth, which, setting up an irritation in the jaw, causes the accumulation of fluid around it. The fluid cavity may connect and be continuous with the tooth cavity, or may be entirely shut off from it, so that extraction of the offending tooth does not always cause the immediate evacuation of the cyst contents. Aside from the bony parts of the jaw, the gums most frequently give rise to tumor formation; here nævi may be found, as well as the more serious adenomata and papillomata. The adenoma may start from any of these parts supplied with mucous glands which are also the seat of the mucous cysts frequently found here. The most important class of cysts in this situation is that called ranulæ, a form of mucous cyst found in the floor of the mouth, generally in connection with the salivary or mucous glands. Dermoid cysts here as elsewhere are always congenital, though often not enlarging to any serious extent until adult life is reached. A form of epithelioma sometimes develops from the irritation caused by badly fitting plates, the diagnosis of which, from simple ulceration, is not always easy. I will mention here also that that peculiar change that is in-

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duced in the inferior maxillary bone by the fumes of phosphorus is another of the lesions of which carious teeth are a powerfully predisposing cause. The maxillary bones are exceedingly common seats of neuralgia, so called, nerve pain generally caused by a necrosis of the teeth or jaw, exposing the nerve endings. This only in surgical cases. Syphilis and tubercular infection not infrequently invade these bones, causing necrosis, sometimes extending through the temporal bone, and thereby affecting the meninges of the brain. Lipomata may develop in connection with the soft tissues of the bone, or may spring from the medullary portion of the bone.

A married lady, age 42, with negative history of specific trouble, whom I operated upon through the courtesy of Dr. T. J. Parker, of Detroit, presented this history.

Some eleven or twelve months before being seen had pain about side of face radiating from lower right side of jaw. The pain at first did not amount to much, but gradually increased in severity and frequency, seeming to be effected by the condition of the general health. The bone round about the second molar tooth was somewhat thickened and at times was extremely painful to touch. Medical aid was sought in the shape of Homeopathic counsel. Advice was given to have the tooth extracted. For a time this seemed to help matters, but it only lasted for a few days, when the dull aching pain was again felt. The next Homeopathic treatment was that in which the bone was subjected to some operation. This I believe was repeated after several days. When I saw the case, the horizontal portion of the bone was involved from the second bicuspid tooth back to the last molar tooth, and almost completely through the body of the bone, as you will see by the specimen that there is only a small spicula, not over one-eighth of an inch thick, with but a small part of the inferior border remaining. Marked maxillary action exerted in eating would have broken the parts as you see. The odor was characteristic. The sublingual and inferior maxillary glands were involved, as were also the soft parts in the immediate vicinity.

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An operation was advised and accepted, and on September 18th, 1894, with the assistance of Dr. T. J. Parker, Dr. E. W. Tonkin and Mr. Randall, we operated, taking out the right lateral half of the bone. An incision was started at the corner of the mouth, or junction of the superior and inferior lip, running parallel with the mouth back about an inch and a quarter, and then upward for about an inch in the direction of the point midway between the external angle of the eye and the lobe of the ear. Room was found through this incision by which means the soft parts could be dissected from the horizontal portion, from the ramus, and the disarticulation made easy. In attempting to place the bone in a firm position by the aid of bone forceps, the part, as noted before, fractured. As I will describe why I made the operation in this manner, it will be needless to go over that part again. From this point the patient made a fair recovery; now, nearly a year after the operation, she is in fairly good health, there being no recurrence of the trouble. Dr. Parker informs me she has been relieved from pain and has, as patients do after these operations when successful, gained considerable in weight. I look for a return of the trouble, but this patient has had freedom so far from the disease, has had no pain to speak of, and has lived this period. If the recurrency takes place tomorrow, surgery has accomplished enough to justify it in again resorting to this same procedure. Personally, I think that these cases are not operated upon often enough, and I advise operative procedure at almost any stage of the disease, even when malignant, to give this temporary relief from pain from the progressive encroachment of the disease, and the lengthening of human life. By this incision from the corner of the mouth, I think that we get much less scar in extent to that left as recommended in the different words upon surgery. The lips, mouth, and cheek are exceedingly elastic, allowing considerable manipulation within the oral cavity, and this of itself makes it possible to carry out a great number of the operations upon the superior and inferior maxillary bone with-

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out any incision; but with the small one running from the corner of the mouth out about one and a half inches, considerable latitude is given in which to remove sequestra or tumors from the cavity. Considerable arterial circulation is saved, and particularly in regard to the facial artery, as we cut it with this incision several lines, at least half an inch, further from where it branches off from the external carotid. This is of material advantage, as there is given off from it inferior branches which are saved; and sometimes even the inferior coronary may be saved; and the fact that the ligature is applied at a considerable distance from the carotid is also of advantage. The second part of the incision that leads upward and outward approaches nearer the articulation than does the old line of incision, which is of benefit in preserving the nerves and in assisting at the disarticulation and the severing of the ligaments and muscles about the ramus, and particularly in securing the internal maxillary artery, when by accident or otherwise this vessel is severed. I know that there will be some who will think that this incision will leave more of a scar than the old one where a middle incision is taken through the lip down through the under part of the chin, and so along the under part of the bone up to the angle of the jaw, and then up to the lobe of the ear; but I, personally, will not agree to this.

This specimen was examined microscopically by Dr. E. W. Tonkin, Bacteriologist and Pathologist to the Deaconess hospital, Detroit, from whom I have a report coupled with my own examination, which makes the diagnosis a round celled sarcoma.

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AN UNUSUAL FATAL AURAL CASE.

LUKE E. SCHELL, M. D. AND DON M. CAMPBELL, M. D.
Detroit.

Mr. President and Gentlemen.

The history of cases is sometimes tiresome to listen to, on account of sameness, and a lack of any interesting feature in them; but the one I am about to bring before you is of unusual rarity, and was very interesting to me, and the thought that it might be of interest to my fellow practitioners is my only excuse for reporting it.

Bertha B., aged two years, was brought to my office Tuesday, June 26th, 1894, by her father, who gave the following history. Two weeks previous the mother noticed a slight discharge from the left ear, which gradually increased in quantity and began to have an offensive odor. The parents thought nothing of it, and did not consult a physician, believing it to be what an old lady called "a gathering and breaking in the ear," which would soon be all right.

As time passed on and the ear did not get all right, but on the contrary continued to get worse, they decided to consult a physician, and brought the child to me for treatment.

I found a plump, healthy looking, well developed child, the youngest of four children, all healthy and strong. The father is a healthy and robust German, aged thirty-eight, and the mother a very healthy American woman, aged twenty-nine. The paternal grandfather died of apoplexy at the age of eighty years; paternal grandmother living and enjoying good health.

Maternal grandparents both living and well. I could get no history of tuberculosis, syphilis, or cancer on either the father's or mother's side.

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On inquiry I found the child's appetite was good, bowels regular; she slept well and played around with the other children as usual.

After cleaning out the external auditory canal, I proceeded to examine the aural cavity with the head mirror, reflector, and aural speculum. I found a small mass of granular tissue, encircling the external auditory canal, which looked like the remains of a ruptured tympanum, such as we sometimes find after an acute catarrhal otitis media. I used iodoform, ten per cent., with boracic acid, and told the father to bring her again Thursday.

He brought the child again Thursday, June 28th, and said the discharge was just as bad as ever.

I cleaned the aural cavity thoroughly, and applied a ten per cent. solution of argentum nitrate to the granulating surface, and asked the father to bring her in next day.

I saw her again Friday, June 29th, and found the discharge from the ear was not so profuse as it had been. I gave the ear the same treatment as I had the day previous, and told the father that, as the ear appeared to be better, he could wait until Sunday to bring her again.

Sunday, July 1st, I saw the child again, and the granulations were not so profuse, and the discharge was very much less. I gave the ear the same treatment.

Wednesday, July 4th, I saw her again, and the aunt who was with the child said that the ear was very much better, and was discharging very little. After cleaning the auditory canal, I was very much surprised to see a small growth, about the size of a pea, on the anterior wall of the auditory canal, near the tympanum. It had the smooth, rounded appearance of a polypus. I passed a probe gently alongside of the growth, and found the base was broad, firm and sensitive, and would bleed very easily when touched. I gave the ear no treatment that day, but asked if the father could come in with the child next day.

He came in with the child Friday, July 6th, and, after ex-

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FRONT VIEW.

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amining the ear, I found the growth had increased in size considerably since I saw it before. I told the father what I had found, and explained to him that it would be necessary to remove the growth before the ear could get well. He wanted to consult with his wife before having anything like that done.

I did not see her again until the following Tuesday, July 10th, when the father came in with the child, and said they had decided to have the operation performed. He said there had been some discharge, tinged with blood, since the last time I saw her.

I cleaned the ear and auditory canal very carefully, and found that the growth very nearly filled the lumen of the canal. I gave the child a little chloroform, and, with a small scoop introduced very carefully on one side of the growth, succeeded in removing the growth which was as large as a large pea.

Considerable hemorrhage followed its removal, which was readily controlled by slight pressure. I then touched the stump with a ten per cent. solution of argentum nitrate, and told the father to come with her next day.

He came with her next day, and said she passed a restless night, and had quite a discharge from the ear, with some blood. After cleaning the discharge away I found the stump looked pouting and angry, and would bleed freely when touched. I made another application of the silver solution, and asked him to bring her next day.

Thursday, July 12th, she was feeling better, but I found practically the same condition in the ear as I had the day previous, and also noticed a slight swelling below the ear, between the angle of the lower jaw and the mastoid process. I feared I was going to have trouble in the mastoid cells. I used the compound stearate of zinc for insufflating the aural cavity for several days, and the discharge from the ear diminished, but the swelling beneath the ear was increasing in size every day. The stump of the polypus had healed over, and was growing again, having much the same appearance as it had previous to removal.

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I thought the polypus was recurring, and told the father so. It was more sensitive and painful, and would bleed more freely when touched than it did previous to the operation.

I suggested counsel, and the father wished Dr. Don M. Campbell to see the child with me.

I met him at Dr. Campbell's office the next day, July 28th, and gave the doctor a history of the case.

After examining the ear, he thought it was an aural polypus and advised its immediate removal. "The growth entirely filled the lumen of the auditory canal near the tympanum at this time."

I gave the patient chloroform and the doctor proceeded to snare the polypus. He succeeded in getting away a portion of it with considerable difficulty, as it was very friable and would break easily. The snaring was followed by severe hemorrhage for so small a growth.

After controlling the hemorrhage we examined the swelling beneath the ear, which was about the size of a pigeon's egg. It was soft, elastic, and slightly fluctuating, apparently containing fluid. We thought from the location, and developing as it did after the first operation, that it might be fluid infiltrating the tissues beneath the ear, gravitating, as it were, to the most dependent part.

Acting on this supposition, a hypodermic needle was introduced in several different parts of the swelling without getting either fluid, blood or pus.

We were surprised at this, and thought it might be a tuberculous gland, which had not yet broken down sufficiently to pass through a hypodermic needle.

As the child had been under the influence of the anæsthetic for some time, we postponed opening it for a few days.

It was several days before I saw her again, as Dr. Campbell was looking after the ear. The swelling under the ear continued to grow so rapidly that we decided to open it and clean it out. At this time it was as large as a small orange, and was pushing the ear upward, outward, and forward. It

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SIDE VIEW.

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was interfering with the function of the facial nerve, causing paralysis of the facial muscles on that side, which showed quite plainly when the child would cry.

On August 9th I met Dr. Campbell at the patient's home, when, after cleaning the parts thoroughly, the doctor gave the child chloroform, and I made an incision from the mastoid process to a point below the angle of the lower jaw, opening it up freely.

I found the swelling contained a soft, friable substance, which resembled cerebral tissue very much, but was darker in color. With a Volkmann's spoon I scraped it all out as clean as possible, stopped all hemorrhage, washed it out with a 1-2000 bichloride solution, closed the wound with catgut sutures, leaving a small opening at the lower part for drainage, and dressed the wound with antiseptic gauze.

The material scraped out of the swelling looked so suspicious that we sent a specimen to Dr. P. E. Hickey for microscopical examination. The child rallied and did nicely for a while, although there was considerable oozing from the wound for several days. The wound healed nicely in a short time, but the sanguino-purulent discharge continued from the ear.

The swelling under the ear began to grow again, if possible more rapidly than before. In the meantime we had received the report from the microscopist, stating that the specimen was from a round celled sarcoma.

In two weeks from the time it had been scraped out, it was as large as a man's fist, pressing the ear outward and upward, extending over the mastoid process posteriorly, and the angle of the jaw anteriorly, and about three inches down onto the neck.

The veins of the skin over the sarcoma were very much enlarged, standing out prominently on the surface, the skin over the growth being shiny and tense.

I gave the father the microscopist's report, and explained to him the nature of the growth, saying the prognosis was very grave. He was anxious to save his child, and asked if

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there could be nothing more done. I told him the only thing that could save the child was complete extirpation of the entire growth, which, from its situation, would be a difficult thing to do, and, if successfully done, would probable be of little or no use, as metastasis undoubtedly had taken place.

The child was suffering a great deal from pain, was very anæmic, and somewhat emaciated. Her appetite was poor, bowels constipated, and the facial paralysis marked on that side.

The parents urged an operation; so on August 23rd, we went to the house, and, after preparing the child, gave her chloroform. I then made two incisions, one on each side of the scar left by the last operation, taking out an elliptical piece of skin from the apex of the growth. I then dissected the skin back on the upper side, cutting through the auditory canal, and went down carefully with the handle of my scalpel to the bone of the skull. I took out a portion of the diseased tissue, and found it involved a part of the superior and inferior maxillary processes, the external carotid artery, jugular vein, in fact all of the deep structure of the neck on the left side.

The whole thing was very vascular, and, as she had lost considerable blood, her pulse was weak.

While debating in my mind whether I had better try and get to the bottom of it, the child suddenly stopped breathing. We performed artificial respiration, and inverted the patient without starting the respiratory act. We had no electric battery with us, and I think she would have died on the table but for the happy thought of Dr. Campbell of applying heat over the cardiac region, which had the desired effect of restoring respiration.

She was so weak, and the circulation was so poor, that any further operative proceedure at that time I knew would result in the immediate death of the child, so I put in a drainage tube, closed the wound with catgut sutures, put on an antiseptic gauze dressing, and put the child to bed.

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REAR VIEW.

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After giving her ether and brandy hypodermically, and applying heat externally, she rallied.

The discharge and oozing were quite profuse for a few days, after which it gradually decreased, although it never entirely ceased. About ten days after the last operation I noticed the sarcoma was growing again very rapidly.

The wound healed very nicely, except the lower part where the drainage tube was inserted, where there was a place about the size of a twenty-five-cent silver piece, whose area increased in proportion as the sarcoma grew.

I saw the child every day, or every other day, to do the dressing, and helplessly watched the sarcoma increase in size, with a corresponding amount of emaciation and diminution in the strength of the child.

She took very little food, the bowels were constipated, and the pain was so severe that she could not sleep without an anodyne. The patient continued in this condition until she died, October 4th, 1894, just six weeks from the day of the last operation.

I had some photographs taken of the sarcoma a short time after she died, which will give you a better idea of its rapid growth. You will notice in the one with the front view, how it has pushed the ear way out from the side of the head; also the paralysis of the facial muscles on that side is noticeable even after death. I would say that rigor mortis had not set in when these photographs were taken.

The last few days previous to her death the skin covering the sarcoma seemed to give way, and the sarcoma began to break down, as will be seen in the front and rear views.

The feet and hands were swollen and œdematous, and the respiration was quite rapid for a week or ten days before she died. Whether this was due to a weakened condition of the heart, or to metastasis and subsequent growth of the sarcomatous tissue in the lungs, I am unable to say, and could not get the consent of the parents to perform an autopsy. But

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I think the apices of the lungs were involved, as there was dullness on percussion on both sides.

The scar on the left breast was caused by the hot application used for resuscitation, of which mention has been made.

You will note, in looking at the photograph, the extreme emaciation of the child, and the enormous size the growth attained in so short a time.

In some of the recent literature on this subject I found several cases reported. A. Marmaduke Shield, of London, removed a sarcomatous growth from the external auditory canal of a patient who had suffered since childhood from otorrhœa, with several attacks of purulent inflammation of the mastoid process. It recurred again in two months, and was subsequently removed without recurrence after six months.

Green, of Boston, removed a sarcoma of the meatus, with recovery.

R. Haug, of Munich, reports a case of aural sarcoma in a woman eighteen years of age, who had repeated attacks of otorrhœa since childhood. It was removed four times, with rapid recurrence each time, and subsequent swelling beneath the jaw and over the mastoid process, which was also removed, to soon reappear, and the patient died eleven months after.

So, on looking up the statistics of different authors on the subject, I found that aural sarcomata were very rare, which, from a purely theoretical standpoint, would seem strange if we accept Cohnheim's theory in regard to the genesis of tumors, which is that sarcomata are the result of the development of latent or displaced connective tissue of fœtal life. The tympanum at birth is filled with a delicate connective tissue, in which are imbedded the ossicula. Upon the establishment of respiration this tissue atropies and finally disappears. Hence, if Cohnheim's theory is correct, and this tissue in the tympanic cavity is not always absorbed after respiration becomes established, we might be tempted to infer that aural sarcomata would be comparatively common.

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SECTION ON MIDWIFERY AND GYNECOLOGY.

OFFICERS.

J. N. MARTIN, Ann Arbor, Chairman.
REUBEN PETERSON, Grand Rapids, Secretary.

SECRETARY'S MINUTES.

FIRST DAY, THURSDAY, JUNE 6th.

2 O'CLOCK P. M.

The Section met in the M. E. Church, and was called to order by the chairman.

The following papers were read upon the subject of

MALIGNANT DISEASES OF THE UTERUS.

I. Pathology, J. B. Whinery, Grand Rapids.
II. Etiology, E. G. Minar, Bay City.
III. Diagnosis, Eugene Boise, Grand Rapids.
IV. Surgical Treatment, J. H. Carstens, Detroit.
V. Palliative Treatment, H. J. Longyear, Detroit.

A general discussion of these papers followed, after which the Section adjourned to 8:30 A. M. the following day.

SECOND DAY, FRIDAY, JUNE 7th.

MORNING SESSION—8:30 A. M.

The following papers were read and discussed.

I. The Status of the Buried Animal Suture and Ligature in Abdominal and Gynecic Surgery, H. W. Longyear, Detroit.
II. Retro-displacements of the Uterus, J. L. McLaren, Saginaw.
III. Surgical Treatment of Ectopic Pregnancy, J. G. Lynds, Ann Arbor.
IV. Ectopic Pregnancy, Hugh McColl, Lapeer.

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AFTERNOON SESSION—2 P. M.

The first order of business was the election of officers, which resulted as follows.

Chairman, E. G. Minar, Bay City.
Secretary, J. B. Whinery, Grand Rapids.
Orator, Reuben Peterson, Grand Rapids.

The following papers were then read and discussed.

I. Some Points Relative to the Use of Forceps and Antiseptics in Labor. The Walscher Position. Collins H. Johnston, Grand Rapids.

II. Ultimate Results, Physical and Mental, in Gynecologic Operations, Eugene Boise, Grand Rapids.

III. Ventro-fixation of the Uterus, J. J. Mulheron, Detroit.

The following paper was read by title.

IV. Menopausal Polysarcia Abdominalis, Walter P. Manton, Detroit.

Adjourned.

J. B. WHINERY,
Secretary *pro tem.*

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THE PATHOLOGY OF MALIGNANT DISEASES OF THE UTERUS.

J. B. WHINERY, M. D.,
Grand Rapids.

In undertaking to treat of the pathology of malignant diseases of the uterus, it is necessary not only to have a knowledge of the normal histological elements of the uterus and their relation to one another, but also to understand the changes brought about by inflammatory processes and benign growths.

As it is well known, a section through the whole thickness of the uterine wall shows, in brief, the following structure. The cavity of the uterus is lined by a single layer of columnar epithelium which extends downward to form the lining of the utricular glands. The mucous membrane varies in thickness from one to two millimeters, and is made up of the glands and an inter-glandular matrix composed of embryonic connective tissue containing large nucleated round or slightly spindle shaped cells. The direction of the glands varies. They may be spiral, usually are simple, and sometimes slightly branched. Their deep ends disappear among the superficial layers of muscular tissue. The largest part of the wall of the uterus is made up of bundles of non-striped muscular tissue supported by a frame work of fibrous tissue, and containing numerous large vessels and lymph spaces. A thin layer of peritoneum forms the external coat of the organ. The columnar epithelium lining the body of the uterus is continued as such through the canal of the cervix to the portio vaginalis uteri. The vaginal portion of the cervix is lined

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with squamous epithelium like the vagina. In the cervix the fibrous tissue is thrown into folds, between which the openings of the glands are found. The glands are more wavy than those in the body, and are lined by a single layer of columnar epithelium.

In general, malignant diseases of the uterus may be comprised in two great classes—carcinoma and sarcoma. In the examination of suspected tissue from the uterus, it is important to keep in mind the normal elements of the endometrium, the intercellular substances, the connective tissue cells of round or spindle-shaped variety, and the glands with one-layered cylindrical epithelium. Neither should there be any confusion of malignant changes with those of a benign character—those brought about in the epithelial layer of the glands and in the inter-cellular tissue by inflammatory action. An increase in the number of one of these elements without entire exclusion of the other, and without much alteration in the appearance of the structures themselves, points to a benign over-growth or a simple endometritis. On the other hand, an overwhelming presence of one element to the entire exclusion of the other, as well as a duplication in the normal single layer which lines the glands, or the presence of cancerous nests, show malignant degeneration.

When normal cells lose their contour and assume that of the spindle shaped variety the diagnosis is not always easy, because sarcomatous cells can be simulated by the cells of the uterine endometrium in extra-uterine pregnancy, and sometimes in chronic endometritis. In case of abortion, however, chorionic villi are usually present. The malignancy or benignity of a growth is inferred, not altogether from the degree of cell proliferation present, but from the relative resistance to invasion of the surrounding tissue.

It is not always an easy thing to decide upon the malignancy or non-malignancy of tissue curetted from the uterus. Tissue of the most varied character is presented for examination. Often only a blood clot, or a necrotic, disorganized bit

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of material is all that is obtained, and from the examination of this a definite answer is expected. Care should be used in getting tissue from the endometrium to procure a sufficient amount to show the relation of the different elements. The diagnosis of conditions in the cervix is oftentimes much easier than those of the endometrium because it is possible to see the part, and to cut out just the tissue desired for microscopical diagnosis. Microscopical sections of tissue from the uterus should be made perpendicular to, and not parallel to, the surface of the epithelium.

In treating of the pathology of carcinoma of the uterus, I must acknowledge my indebtedness to the publications of Veit and Leopold upon the subject. With regard to the seat of origin of carcinoma of the uterus, we need to recognize but two classes for all practical purposes. Under the first class we will consider those which begin on or near the cervix; under the second, those which originate in the body of the uterus.

Cancer of the cervix is an abnormal epithelial growth arising from the epithelium of the surface, or from the epithelium of the glands. The epithelial nodules have branch-like ramification spreading out in the most varied manner. They lie between the separated muscular fibers in the inter-muscular connective tissue, and seem to follow the channels of the lymph vessels through the parametrium. In case of beginning carcinoma on its vaginal aspect, early in the progress of the disease processes dip into the adjacent tissues. Hypertrophy of the cervix, followed later by ulceration, occurs in carcinoma.

In the earliest stages visual examination and palpation can prove nothing more than a probable suspicious nature of the growth. Cases in which every touch of the instrument causes hemorrhage, where the whole surface of the portio presents a parenchymatous, hemorrhagic condition, can only be looked upon as suspicious. There are erosions of a simple nature which present the same symptoms. In nulliparæ all cases

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are suspicious in which the os shows an abnormal condition similar to that produced by traumatism at child-birth. The only surely benign change is the one brought about by the ovules of Naboth. Shrœder says the Ovula Nabothi are usually present in erosions.

When there is present with erosions atypical cell processes dipping down into the tissue, or groups of epithelial cells showing an alveolar arrangement, these conditions point to a malignant degeneration.

It has been said that a cancerous nodule in the cervix presents a yellow color, and that the relative hardness of a myoma is greater than that of an unyielding but softer cancer, but these points can only be used in summing up the suspicious nature of the disease.

Carcinoma can appear upon the under part of the os uteri, also upon the vaginal portion or neck, as well as upon the upper part, without a change in the rest of the mucous membrane of the uterus. Leopold states that in a uterus there may be present a cancerous nodule in the vaginal portion of the cervix, and at the same time, without any connection, a similar growth in the hollow of the uterus. And it seems quite probable that, in case of cancerous involvement of the lower part of the uterus, the mucosa in the upper part may undergo a malignant change of a connective tissue type. In other words, sarcomatous cancer of the lower part of the inner os uteri usually proceeds from the epithelium of the portio, and probably most of the so-called collum carcinomas proceed from the epithelium of the vaginal portion.

There is great difference of opinion as to the origin of malignant adenoma in the uterus. Ruge is inclined to believe that all adenomas sooner or later become malignant in character, and that malignant adenoma, on account of its virulent course, and because out of it true carcinoma can be developed, should be grouped simply as carcinoma. The presence of pure adenomatous points in such carcinomas prove that this is often the case. But whether the adenomatous

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stage always precedes the carcinomatous, whether all adenomas finally become carcinomas, whether the carcinomatous tissue begins immediately as such in the glands, we are unable to say. Veit is inclined to believe that carcinomatous degeneration in glands comes from a rich growth and increase of the glands themselves. Hofmeier says we cannot ascribe to an adenoma the character of malignity so long as it is confined to the mucosa. In glandular carcinoma of the uterus the epithelium begins to grow either through the whole of the gland or in separate spots. The normal cylindrical cells lose their characteristics, and through proliferation the gland becomes filled with polymorphous epithelial-like cells.

Carcinoma of the body of the uterus is confined almost wholly to women of advanced years. Two-thirds of the cases make their appearance after the age of fifty. It seems to be the general opinion that cancer of the body occurs with relative frequency in nulliparæ, or those women who have borne but few children. Carcinoma of the body arises from epithelial tissue, and the characteristic constituents differ from all normal epithelial structure in form, size, and grouping. It arises from the surface epithelium or from the glandular epi thelium. In the first case, it shows the alveolar structure, in the second, the glandular. Leopold describes three stages in the progress of the disease. During the first stage there is but little spread, the change is confined to the surface, and the upper layers of muscle only are attacked. There is noted a proliferation of glands and the growth of newly formed capillaries. The cylindrical epithelium of the processes first assumes the form of a tuft, later that of an alveolus filled with cells. In the second stage there is a spreading downward between the muscles, with a destruction of the same, and also beginning necrosis of the surface. In the third stage the disease spreads through all the layers of the uterus. The connective tissue in cancer of the uterus is often strongly infiltrated with small cells, so that frequently, especially in thick sections, there arises a confused mingling of small round

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cells and cancer alveoli. If the latter are very minute they may be quite concealed by small-celled infiltration.

As regards secondary infection, the lymph vessels of the muscles of the uterus are the most important channels for the spread of the disease. No one can tell before or during an operation to what extent a cancer has spread. The lymph glands which lie under the peritoneum, and the lymph channels which lead off through the broad ligament, become involved early. Palpation of the glands in the broad ligament is always difficult, if not impossible. In cancer of the cervix the disease spreads by direct contact, and by infection of the pelvic lymph glands.

Sarcoma of the uterus is of relative infrequency. Virchow describes three forms, round-celled, spindle-celled, and myxosarcoma. Recently Max Sanger has added a fourth variety, sarcoma deciduo cellulare. Sarcoma may originate primarily in the wall of the uterus or in the mucous membrane, usually in the mucosa of the body, rarely in that of the cervix. This mucous membrane becomes pulpy and brain-like, the uterus is enlarged, and the cavity elongated.

In examination of tissue it is not always easy to determine between changes produced by chronic inflammation and abortion, and those resulting from sarcoma. It is easiest to separate decidual cells, as chorionic villi are usually present. The only exception to this are the decidua that have been developed in extra-uterine pregnacy. Sarcoma is to be diagnosed when the microscope reveals masses of cells of the connective tissue type, while between them the normal constituents are left unchanged. In benign endometritis usually the cells and the glands are uniformly changed. The rare diagnosis of sarcoma of the portio and cervix is to be made when, without the growth of circumscribed epithelial nodules, the connective tissue shows the well-known structure. Sanger insists upon the origin of malignant deciduoma from decidual elements, as it has been found only in patients who were recently pregnant.

During the past seven years few subjects in pathology have

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received so much attention as carcinoma. The progress in bacteriology has led investigators to hope that in this science lay the key to the mystery of its etiology. Many attempts have been made to prove the parasitic nature of cancer, but on the whole they must be regarded as unsatisfactory.

So to-day the broadest field for original investigation seems to lie along the line of research into the causes of this dread disease. When these are determined, the physician may hope to find some more effective means for its prevention and cure.

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MALIGNANT DISEASES OF THE UTERUS, ETIOLOGY.

E. G. MINAR, M. D.
Bay City.

Although the etiology of the various malignant growths which may affect the uterus is still obscure, and although there is much concerning their origin of which we are ignorant, I think it may be safely asserted that the medical profession of today has a better understanding of some of the factors operative in their production than heretofore.

This result has been attained as a consequence of an immense amount of investigation and observation. The comparison of facts gleaned by the clinician, the pathologist, and the surgeon, has, in a measure at least, increased our knowledge of some of these factors, and modified or dispelled views formerly held concerning others.

That we can really say that we know of any new factor or factors which may be active in the production of such affections, or cause benign growths to assume malignant types, cannot as yet be answered in the affirmative. But we have learned, as the result of more recent investigation, and by the comparison of facts there gathered, to place more stress upon certain factors which may be operative in malignant growths of the uterus, and, on the other hand, to attach less importance to other causes, than formerly.

The brilliant results obtained by surgeons, within the last few years, in the saving of life by total extirpation of the uterus for malignant diseases, while yet in its incipiency, has

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been largely instrumental in moulding the opinion, now generally accepted, of the local origin of such neoplasms.

The weight formerly attached to heredity in the production of this condition, and which is still so strongly insisted upon by Lawson Tait, seems to be diminishing in importance in the minds of many gynecologists; a factor still, no doubt, if judged by statistical reports cited by Scanzoni, Meyer, Tanner, and others, but playing a much less important role than in malignant disease of other parts of the body. Thus, out of 1,203 cases of cancer of the uterus, it was found that but 90, or 7.6 per cent., gave a history of cancer occurring among the more immediate relatives of the patient. (Gusserow, Cyclopœdia Obs. and Gyn., vol. 9, page 372.)

On the other hand we have come to attach more importance to age, when considered in connection with prolonged irritation or trauma, as causative factors than heretofore. That these factors have not been recognized by the profession for years past as being agents productive of uterine neoplasms, destructive in their nature and fatal in tendency, is not denied. Virchow insisted upon the last-named factor as being an important agent in the production of many morbid growths, and by way of illustration cites the epithelioma occurring on the lips of pipe smokers, scirrhus of the pyloric orifice of the stomach and mammary gland, epithelioma of the anus and cervix uteri, and cancer of the scrotum in chimney sweeps—in short, those portions of the body liable to prolonged irritation—as corroborating this view.

But since the vital importance of an early recognition of this condition has been so strongly insisted upon by surgeons, that the best prospect of success by surgical intervention may result, the life of the patient be prolonged, her suffering diminished, and an increased hope of recovery held out, we are becoming more and more impressed with the fact that, in women who are at or past the climacteric, and are having irregular hemorrhages, or sanious discharges, however slight,

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it is our urgent duty to make a most careful examination, and ascertain the condition present, and to regard all such cases as being suspicious of malignant trouble, until we have satisfied ourselves that our fears are groundless.

The vast majority of all cases of cancer of the uterus occur in women between 30 and 60 years of age. Of 3,385 cases collected by Schroeder, Schatz, Winckel, Scanzoni and others, 1,169 or over one-third, occurred between the 40th and 50th years of life, and 2,775 of the cases collected, or more than nine-elevenths of the whole number cited, were in women of from 30 to 60 years of age. While there were but two cases occurring prior to the 20th year, one of which (reported by Glatter) was but 17 and the other (reported by Beigel) 19 years of age.

While sarcoma seems to be governed, as to the time of its appearance, less by age than does carcinoma, still the majority of all cases occur during this same period of life. Thus Gusserow has tabulated a report of 73 cases of sarcoma uteri, 61 of which were in women between 30 and 60 years of age. On the other hand the number of cases in which it appears prior to the 20th year is relatively much greater than in carcinomas.

That the negro race is singularly exempt from malignant trouble of the uterus is well-known, and this peculiarity has been repeatedly pointed out by physicians of the South. The same exemptions seem to exist in the colored race of Africa, so far as can be learned by reports of investigators upon the subject. Indeed, Livingston in his book of travels comments upon the rarety of cancer in general in the natives of that country.

I am not aware that a satisfactory explanation for this exemption has as yet been offered. Civilization and a higher degree of intelligence among European races are thought by some to play a part in the increased frequency of malignant uterine disease. If this be true, the importance of such a

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factor must be slight. On the other hand, old lacerations of the cervix which have been left unrepaired may be in many instances the starting point of epithelioma. This condition (viz: laceration of the cervix uteri) when accompanied by a prolapsus which causes the cervix to rest upon the pelvic floor may produce eversion of the cervical lips, causing in time, from the continued irritation of the parts, a mass of granulations to spring from the surface of this ill-conditioned womb, and which under further favorable circumstances, such as a perverted nutrition, obstructed pelvic circulation, etc., may eventually result in one of the most frequent forms of malignant disease of the uterus, viz: cervical epithelioma.

The influence which frequent child-bearing has in the production of cancer is of importance. It seems evident from the facts collected bearing upon this subject that those women who at some later period of life developed this malady have borne an average number of children in excess of women not so affected. Scanzoni places the average deliveries of such women at 7.01 per cent., while others are more conservative, Schroeder's estimate being 5.02 per cent., Winckel's 5.6 per cent., West's 5.6 per cent., and Gusserow's 4.5 per cent. It is highly probable that the average number of deliveries occurring to each married woman, irrespective of disease, is considerably less than the lowest authority just cited, and much below the estimate made by Scanzoni for women who in later life become the victims of this disease. Excessive sexual indulgence, especially when accompanied by intensity of the act and corresponding emotional excitement, is also believed to be an important factor in producing this condition.

It is evident from reviewing the various causes already enumerated that traumatism, or prolonged irritation of the parts, plays a very important role in producing this most deplorable condition with which so many women are afflicted, and which causes such a frightful mortality even at the present time. There are other factors which are operative, and which we

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hope some day to see fully or at least partially elucidated. That a cancerous growth is essentially of epithelial origin, having an alveolar structure, and that sarcomata arise from embryonic connective tissue, has been demonstrated by the microscope; but the perverted force which arranges them in characteristic form and stamps their cells with a malignant influence we fail to grasp. The parasitic theory has not as yet been fully demonstrated. The existence of any specific micro-organism has been denied even by some pathologists, while others feel that they have found or will find this to be the factor which is productive of these neoplasms. Thus Thoyea (Am. Jour. Med. Sci., 12, '89,) says as a result of his investigations that he has found in the epithelial nuclei of carcinoma small cell-like structures, which from the character they exhibit must be considered to be of a parasitic nature, and that they are present in carcinoma of the rectum, stomach, and breast. He calls attention to the fact that similar parasites are the apparent cause of epithelial growths in birds. While Gibbes, in an article on "The Parasitic Nature of Cancer" in the Amer. Jr. Med. Sci., July, '93, draws conclusions adverse to this hypothesis, at least so far as a large majority of the glandular carcinomata are concerned.

The embryonic hypothesis of Cohnheim, which explains the appearance of tumors in later life by the persistence of embryonic germinal cells in otherwise mature tissue, does in some degree, apparently, account for the origin of these neoplasms.

That women are the subjects of malignant growths two or three times more frequently than men, and that either the breast or the uterus is the favorite location of such disease in a majority of instances, is very significant. No other organs of the body are subject to the same wide variations in size and activity of growth, such as extreme vascularity and rapid diminution of size under certain physiological conditions, as are they. Further, they are more liable than other organs to

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traumatism, or prolonged irritation, because of their position and respective functions. Under these circumstances it would certainly seem that in them cell formation and cell nutrition must be most actively carried on, and that consequently any disturbance of this process, and any perversion of the force which normally produces cell elements in an orderly and beneficent manner, must result most disastrously to the organism.

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MALIGNANT DISEASES OF THE UTERUS; DIAGNOSIS.

EUGENE BOISE, M. D.,
Grand Rapids.

My purpose is simply to consider the question of diagnosis as it appeals to us as general practitioners, and I shall not touch upon those characteristics which only the microscope will reveal.

But I wish, first of all, to emphasize the fact, so often dwelt upon, that an early diagnosis is the element upon which the safety of the woman depends. And I wish further to enforce the thought that an early *effort* at diagnosis must be made. It is not enough to say the trouble is probably this or probably that, when there is a *possibility* of malignancy. We must satisfy ourselves that it is *not* malignant in every case which is at all suspicious in its nature. Or rather, we must use all means in our power to satisfy ourselves that this condition does or does not exist.

The great reason why so many women die every year from cancer of the uterus is because of negligence both on the part of the woman and her physician, for cancer of the uterus, taken early, is comparatively curable.

How then shall we recognize cancer? First, by making a thorough examination of every woman who comes to us with symptoms referable to the pelvic organs, especially if the woman's age be between thirty-five and fifty years. We must try to know what we are treating before we prescribe. We must not take the diagnosis offered by the patient herself, as we too often do.

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The diagnosis of cancer of the uterus can only be made by physical examination. The classical symptoms of pain, with a sero-purulent discharge, and occasional irregular hemorrhages, are in a majority of cases indicative of cancerous disease, but too often so far advanced as to be incurable. In the early stages of a majority of cases none of them are present in a noticeable degree.

Let me premise my description of the symptoms and physical signs of the cervix by saying that the great majority of cases occur in women at or near the menopause, and this one fact is responsible for a great many mistakes in diagnosis, as popularly any and every malady occurring at that time is referred to the woman's age, and is considered as something that must be born.

For the purposes of description I will classify carcinoma of the cervix under three heads.

First.—The papillary, or cauliflower growth;

Second.—The nodular, or ulcerative form; and

Third.—What I call the excavating form.

This classification is based on the manner of growth or development, and on the physical characteristics discovered on examination.

I have said that in the early stages there are few symptoms; but there must be some, enough to cause the woman to consult her physician. Those symptoms may not all be pelvic, but may be disturbances of other organs, neuralgic, dyspeptic, or nervous.

The early symptoms are not caused, as a rule, by the presence of the malignant tissue itself, but by the coincident or consequent metritis and endometritis set up by the disease, and are such as we generally see dependent on these conditions; a somewhat increased leucorrhœa, nearly normal (if I may use the term) in character; an exaggeration of menstruation, and perhaps various reflex disturbances. Local symptoms other than menstrual, etc., may be entirely absent. Soon it will be noticed that any extra exertion or

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slight injury may cause a slight bleeding, so slight it may be as to almost escape notice, or to merely stain the leucorrhœal discharge. As the disease progresses these become more marked, so that, even though attributed to the menopause, they drive the sufferer to the physician for relief.

Of the pain, which is an early symptom of cancerous disease in some other parts of the system, there is generally little or none, or merely an exaggeration of the pains to which the woman has grown accustomed.

But it is by physical examination that the diagnosis must be made; and even the aid of the microscope must often be invoked. That which the touch discovers must be confirmed by sight, but it remains a fact that often the educated touch will reveal more than the eye can discover.

Of the three varieties which I have mentioned, that known as cauliflower or papillary is perhaps the most easily recognized, and though formidable in appearance is comparatively benign.

Springing as it does from the epithelium of the vaginal portion of the cervix, its tendency is toward downward growth into the vagina, invading the deeper cervical tissues and efferent lymphatics only comparatively late in the disease.

Therefore, while formidable in appearance, it is comparatively curable by surgery. Even if the disease has spread from the surface of the cervix to the epithelium of the vagina, it has not gone too far for hope of permanent cure by surgery, as the tendency is to spread superficially and not deeply, and the diseased tissue can be thoroughly removed. This cauliflower or fungus variety may spring from an erosion of the cervix, which in its original nature is benign.

It would hardly seem necessary in these days to describe the physical appearances of the cauliflower variety of epithelioma, and yet the advice is often given, when such a growth is discovered, to "wait a little while and see how it develops," when there is nothing else that the growth can possibly be. If it be small when first seen, comparatively localized in one

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portion of the cervix, it may perhaps be excusable to wait till it is proved conclusively that the growth is increasing; but a safe rule is to appeal at once to the microscope if in doubt. To the touch the growth seems irregular, more or less firm, and perhaps bleeds easily, but not always. These growths often attain size enough to almost completely fill the vagina without any serious hemorrhage having occurred.

There is another form which I have termed nodular, because in its early stages it is characterized by small, hard nodules appearing under the mucous membrane of the cervix. This condition causes no distinctive symptoms, and can be recognized only by physical examination, and in the early stages a positive diagnosis is impossible without the aid of the microscope. These nodules are more easily recognized by the touch than by the sight. They may be confined entirely to one lip, or to one portion of one lip, and to the touch give a sense of firm, round, immovable bodies lying beneath the mucous membrane or imbedded in the superficial tissue of the cervix. They are generally firm, and the surrounding cervical tissue gives an indescribable sense of infiltration.

The history of these cases is to finally cause superficial ulceration and enlargement of the cervix; and if the growth is downward (as is generally the case) a fungoid mass is proliferated from the ulcerated tissue. If seen early, before the stage of ulceration, the tissue of the cervix will be seen to be somewhat raised, more or less livid, and irregular from the presence of these nodules. If the case is not seen until the stage of ulceration, it is still difficult to make a positive diagnosis.

The edges of the ulceration are generally clean cut and slightly raised, the surrounding tissue slightly dusky, the surface of the ulcer finely granular and of a yellowish cast. Before the period of ulceration the discharge is quite thin and watery. After ulceration occurs it becomes more purulent. During either stage it may be flecked with blood, or slight hemorrhages may occur after exertion or injury. After the

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disease has reached the fungoid stage, frequent pronounced hemorrhages may occur, and may be troublesome by reason of the amount of blood lost.

In the early stage of this form of the disease the diagnosis will rest between three conditions; nodular carcinoma, small fibroids, or glandular degeneration of the cervix. In fibroid degeneration the nodules are "clean cut," that is, they are distinctly limited, and the surrounding tissue is not infiltrated nor livid. Moreover, such conditions of the cervix are rare.

Glandular degeneration is almost always associated with laceration of the cervix, and section of the nodules gives exit to a viscid mucus. After ulceration has occurred diagnosis is very difficult in the early stages, especially if laceration of the cervix co-exist, and the aid of the microscope must be invoked.

The third variety of carcinoma of the cervix, which I have denominated "excavating," is comparatively insidious, and easily overlooked in the very early stages. Beginning as it does in the glands of the cervical canal, or in the sub-mucous connective tissue, it tends to infiltrate the entire cervix, not appearing on the surface until comparatively late in the disease.

The early symptoms are those of cervical catarrh, with a tendency to bleed on slight provocation. In this early stage the disease is seldom seen. When the patient comes for help there is a history of a more or less irregular leucorrhœa and irregular hemorrhages.

Examination reveals a cervix somewhat swollen, dusky, irregular as to its vaginal surface, but often not more so than in cystic degeneration; but the os is generally irregular in outline, with the appearance of sharp edges, as from intra-cervical ulceration. Exploration of the cervical canal causes free bleeding, and shows the cervix to be but a shell filled with broken down tissue.

Into the question of diagnosis of primary cancer of the body of the uterus I will not enter, except in so far as to say that

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in all cases of enlarged uterus, at or after the menopause, with the history of a thin, irritating discharge, and irregular hemorrhages, suspicion should be aroused and the aid of the curette and microscope sought, inasmuch as all excessive or irregular hemorrhages from the uterus at any period of life are pathological.

Finally, Mr. Chairman, I wish once more to emphasize the grave obligation resting on us all to use all effort to make an early diagnosis and to urge immediate surgical relief, and I may be allowed to quote the words of Dr. John B. Roberts, of Philadelphia, in a paper recently read before the Pennsylvania State Society, "The proper treatment for all malignant tumors is early and radical removal. A medical man who directly or indirectly encourages a patient with an operable malignant growth to postpone operative extirpation is guilty of the gravest professional error. If he is not sure of the character of the suspicious growth, it is his duty to insist upon examination by someone experienced in the diagnosis of such lesions."

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MALIGNANT DISEASES OF THE UTERUS; SURGICAL TREATMENT.

J. H. CARSTENS, M. D.,
Detroit.

Gentlemen:

Having made the diagnosis, in the present state of our knowledge, there is but one treatment if we expect absolutely to cure our patient and prevent recurrence, and that is early surgical interference. With me the greatest difficulty is to make the diagnosis early enough, and all cases which are suspicious I subject to curettement with or without an anæsthetic, and have the removed particles carefully examined with a microscope. And then we are often lead astray by the pathologist, as they sometimes make mistakes just as we surgeons do.

About a year and a half ago I had such a suspicious case, where the woman had passed the menopause and had considerable pain in the uterus, and a thin, watery, ichorous discharge, more or less constantly, with an occasional slight hemorrhage. Without any microscopical examination everyone would say all those symptoms clearly indicated malignancy. She had a slightly lacerated cervix, but this seldom causes trouble after the menopause, so I paid no attention to it. In order to be sure, I curetted this patient's uterus and had the curetting examined, and it was pronounced malignant. I stated so to the family and advised an immediate vaginal hysterectomy. They hesitated and were bombarded on all

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sides by friends, relatives, and other physicians, and they finally went to another very able surgeon, who, without a thorough microscopical examination, claimed that all her trouble was due to the lacerated cervix, and that by having that repaired she would be cured. He was allowed to perform the operation, and obtained a very good result. The discharge much diminished, but the other symptoms continued. She was very neurotic, and finally decided after some months to return to me, and, as I had made the diagnosis before, I could see but one thing to do and that was to remove the uterus. I performed vaginal hysterectomy, and she made a splendid recovery.

The uterus seemed perfectly normal, not a sign of malignancy. I cut it in slices, gave one to the surgeon who had operated for the lacerated cervix, and to a number of others. These sections were examined by a number of microscopists, and not one could find malignant trouble. The question to my mind is, was it really malignant or not; did the pathologist make a mistake in the first instance in examining the scrapings, or was that only a small malignant part which was removed by the operation for laceration, and which did not have time enough to recur before I operated on her. Such cases always make us doubtful of our ability, and of that of the pathologist, to absolutely diagnose the case. In this case there was the great gratification that all symptoms disappeared and the patient was finally restored to health, which exclusively proves that if it was not malignant there was such serious irritation of the nerves that it could only be cured by removal of the uterus.

You will allow this digression, as in my opinion the whole question of malignant growths simply revolves around the question of diagnosis, and as this ground has been so thoroughly covered by Dr. Boise nothing is to be added. When the diagnosis is made, there is only one thing more to do, and that is to operate, so that I could condense my paper into

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one single line; make the diagnosis early, and then remove the uterus. With the details I will not burden you; the disease must be absolutely limited to the uterus; the latter must be movable, otherwise radical operation is of no avail.

The only question I might dilate upon is that of vaginal versus abdominal hysterectomy for malignant growth. I read the wonderful statistics of vaginal hysterectomy, and sometimes I produce some myself, and then I would have a string of cases where the results were very bad; where there were cases with adhesions from old pelvic trouble, with uncontrolable hemorrhage, or secondary hemorrhage, with adhesions of the intestines to the cul-de-sac, and so on, which has gradually taken me away from vaginal hysterectomy and has made me drift more and more to abdominal hysterectomy. On inquiry of experienced cœliotomists in various parts of the country, I have found that the drift of all has been in the same direction, so that now about half of my operations are vaginal and the other half abdominal. That I had no fear of abdominal hernia I shall show in discussing Dr. Boise's paper tomorrow. By the abdominal method, with the patient in the Trendelenberg position, I know absolutely what I am doing; I can control all the hemorrhage, break up adhesions without injury, or if any are produced I can immediately repair them, and thus feel perfectly safe.

Cases advanced, where the uterus is fixed, where there is more or less involvement of other tissues, are unfitted for radical operations; or where there is recurrence, palliative treatment only is indicated. General practitioners should be very careful and conscientious, and not treat cases where more or less hemorrhage and irritating discharges exist, and which do not respond promptly to treatment. Such cases should be promptly curetted, or particles of suspicious mucous membrane removed with scissors, placed in dilute alcohol, and sent to a pathologist for examination. It is only in the *early cases* surgery offers positive cure; that is, no recurrence will take place.

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I have of cases from three to five years standing without recurrence. When the cases are not early enough, I refuse to perform a radical operation, but would make use of curetting and cauterization, which will be taken up by my friend in the succeeding paper.

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MALIGNANT DISEASES OF THE UTERUS, PALLIATIVE TREATMENT.

H. W. LONGYEAR, M. D.,
Detroit.

In advanced cases of malignant disease of the uterus, where any treatment applied to the eradication of the malady is hopeless—and I should class all cases as beyond hope of cure in which examination shows that the disease has extended into the broad ligaments, rectum, bladder, or other viscera—then such treatment should be pursued as will conduce to the comfort and prolongation of the life of the patient. Whatever our individual ideas may be regarding the value of life when beset with the horrors of malignancy, and however unpleasant our task while waiting with forced cheerfulness for the hair to snap that holds the sword of Damocles over our patient's head, it is still our duty as physicians to preserve that life as long as possible, and to make its possessor as comfortable as our wisdom and skill, and, I may add, our kindness and tact, will permit. These are the cases that apply to the abdominal surgeon too late—the cases of mistaken diagnosis, many of which are treated with busy speculum and swab from week to week, and month to month; ignorance holding sway until the disease passes beyond the reach of knowledge—cases of which it may well be said:

> "The saddest words of tongue or pen
> Are these: 'It might have been.' "

The treatment should be both constitutional and local, and practically the same in all varieties of malignant disease.

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The *constitutioual treatment* should be not only medicinal but mental and dietetic as well, and I always consider the mental part of it first, as the comfort of the patient is vastly enhanced by a cheerful, hopeful condition of the mind, and the resultant harmonious action of the nervous system. In the first place do not tell her that she has a cancer unless it is positively necessary to do so. Some intimate friend or relative may be informed for the purpose of protecting your reputation, and the patient informed that she has a growth that cannot be positively cured, but may be much benefited by attention to her general health, and the application of appropriate local treatment. The word "cancer" carries with it such a world of horror to most women that it is usually best for the patient's peace of mind to avoid using it in some such manner, if possible. Then they may be cheered, even if they know the nature of their malady, by the assurance that the disease is often slow in action, and that its debilitating effects may be controlled to a large extent by judicious diet, healthy surroundings, and proper treatment. The environments of the patient should not be neglected; her surroundings should be as cheerful and sanitary as her social position will admit of. The diet should be as nutritious in blood making properties as possible, consisting largely of albuminoid substances, such as fresh meats, eggs, fish, milk, etc. The use of a good red wine with the food will often be useful in assisting digestion.

The medicines administered should be mainly of a tonic character, and such as will tend to enrich the blood and strengthen the nervous system, with special reference to increasing the red blood corpuscles, thus counteracting the natural tendency of the disease to extreme anæmia. For this purpose I have found nothing better than the use of iron by hydrogen, arsenious acid, and sulphate of strychnia, given combined in tablet form. Medicines will have to be given for the relief of nervousness, insomnia, and pain, sooner or later in the majority of cases, and for this purpose I begin by

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using the mildest sedatives and analgesics first, and only those that will in their action disturb the physiological functions of the body the least. Hence I use the stronger narcotics, such as morphia and other preparations of opium, only when obliged to by the failure of less powerful remedies, as the effect in locking up the secretions and inducing derangement of normal functionation of stomach and bowels is such that the system is weakened and the end hastened. Toleration of opium is also so rapid in some cases that if its use is begun early it may become worn out and useless when the most painful and trying stage of the disease arrives. It should be held as a *dernier* resort, and only used for the relief of severe pain; in this way it can be made of the greatest comfort to the sufferer and will not fail in the hour of her greatest need. Cannabis indica, hydrobromate of hyoscine, acetanalide, phenacetine, antipyrine, etc., can be judiciously used for a long time before resorting to opium, and in fact cases often occur in which opium is not indicated during the whole course of the disease. Pain is not invariably present in cancer of the uterus; neither is the intensity of the pain the same in all cases; consequently the administration of analgesics and narcotics will necessarily depend upon the indications in each individual case.

The *local treatment* is of the utmost importance, as on its efficiency depends much of the comfort of the short life of the patient. The treatment is of course symptomatic and should be directed:

First. To checking hemorrhage.

Second. To diminishing the offensiveness of the discharge.

Third. To relieving the pain.

To *check hemorrhage* the treatment should be general and local. If the bleeding is considerable, the general treatment may consist in keeping the patient quiet in bed, and the use of ergot and hydrastin (alk.) by suppository per rectum. In the local treatment of hemorrhage, plugging by the use of the tampon should be first considered, as it can always be quickly

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used to temporarily stop the flow until more rapid measures can be arranged for. The maneuver is best and most expeditiously accomplished with the patient in the knee-chest position, when with a Sims' speculum or two fingers of the disengaged hand to retract the perineum the vagina can be quickly filled with a kite-tail tamponade. If the pledgets are previously wrung out in an antiseptic solution, they may be left in position for three days. Glycerite of tannin or other astringent may also be used on the cotton. The curette may be advantageously used, for by scraping away all of the soft tissue and leaving only the hard material composing the cancer the bleeding will be very thoroughly controlled. For this purpose Simon's sharp spoon is the most useful. Still better results are obtained if after using the curette the actual cautery or strong caustics be applied. For the latter, Sims recommended the use of chloride of zinc (300 gr. to 1 oz.). Tampons of cotton squeezed as dry as possible out of this solution are packed into the cavity, and below them other tampons moistened with a solution of bicarbonate of soda are placed to prevent the caustic from injuring the vagina. The pledgets should all be removed at the end of twenty-four hours, and the vagina douched thoroughly with an antiseptic solution two or three times a day until the slough caused by the caustic separates and comes away, which occurs in a week or ten days. The resulting slough usually comes away in the shape of a cast of the cavity where the application was made, and leaves a clean granulating surface lining the excavation. Some fever is likely to occur while the slough is forming, but the febrile action usually subsides promptly with the separation of the slough. The Paquelin cautery is the best instrument to use for applying the actual cautery, and its use should be followed by the antiseptic treatment as in cases where the caustic is used. By the use of the curette, followed either by cautery or caustics, the hemorrhage is controlled with certainty, and the discharge ceases to be offensive until sufficient time has elapsed for fresh portions of the growth to die and become

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putrid. The fever caused by the sloughing material will also abate and not return till more sepsic absorption occurs from the death of a new portion of the tumor. Patients will often experience great temporary benefit from this operation, gaining rapidly in weight, strength, and general health, and by repeating it when occasion requires, the lives of many patients can be prolonged in comparative comfort.

As illustrating an uncommon method of palliative treatment, and yet one that in this instance has proved effective in the prolongation of the life of the patient, I will briefly narrate the case of Mrs. I., upon whom I operated on January 12th, of the present year. She had a tumor of the uterus, which felt like a rapid growing soft myoma of about the size of two fists. On account of the often recurring hemorrhage extending over a period of about three months, I decided to remove the uterus by the abdominal method. Owing to a continued rise of temperature and a cachectic appearance of the patient, which had been of recent development, malignancy was suspected, and the relatives of the patient so informed. This proved to be a wise provision, as on opening the abdomen and separating adhesions of the omentum to the tumor its friable wall was broken into, and the soft sarcomatous material exuding quickly demonstrated its character. With this soft, broken-down material also appeared lumps of fæces, indicating a communication with the colon. Further examination showed the communication to occur just above the sigmoid flexure. I then determined to resect the bowel and make an end-to-end anastomosis after removal of the tumor, but, on endeavoring to break up the adhesions, I found it impossible to remove the mass, as it was also intimately adherent to a mass of small intestines. This embarrassing condition of affairs was also complicated by another opening, which appeared, as a result of the breaking up of adhesions, in the bowel at the lower side of the tumor, just above the rectum. The cure of the patient by the removal of the tumor being impossible, the palliative course was decided

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upon, and the operation completed as follows. The tumor was freely opened up to its junction with the margin of the healthy descending colon, and its contents completely scraped out with the fingers and curette, and the cavity washed thoroughly with sterilized water, after which the open end of the colon and the opening into the tumor were stitched to the lower angle of the abdominal incision. A wall of iodoform gauze was then made around the entire mass, extending from the bottom of the pelvis up and outside of the abdomen, and the operation completed by drawing the upper part of the wound together with silkworm gut sutures. The recovery of the patient was of course slow, but it was uninterrupted, and she left the hospital four weeks after the operation free from pain and able to walk. She is now—five months after the operation—enjoying as good health as is compatable with the presence of the artificial anus, has gained some in flesh, and is in good spirits. The tumor is increasing in size very little, if any, and gives no pain. Whatever your or my ideas may be of the value of life under these conditions, the fact remains that for the results in this case I have received more expressions of gratitude from the large family of this beloved mother for thus prolonging her life than for any other operation giving perfect results that I ever performed; and the example in this case will ever incite me to similar action in cases that are beyond cure.

To diminish the offensiveness of the discharge, the use of the curette, cautery, and caustics, as before mentioned, are very efficient. Other applications, however, must be used, and probably the first in usefulness is peroxide of hydrogen. I know of no antiseptic that will so quickly and completely deodorize and destroy foul smelling, septic discharges without injury to surrounding tissues as this preparation. If applied directly to the diseased surface, it may be used full strength once or twice a day; when used as an injection it is usually diluted about one-half with water. Injections of iodine water (2 drams of the tincture to 1 pint) two or three times

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a day may be used, or carbolic acid (2 drams to 1 pint) in the same manner. Pure chromic or nitric acid may be applied directly to the ulcerating surface, care being taken to protect the surrounding healthy parts from the action of the agent, and washing the excess carefully away after the application.

To relieve pain, local applications in the form of suppositories may be made, the medication usually consisting of morphia, hyoscyamus, belladonna, cannabis indica, etc.

In concluding these brief remarks on the palliative treatment of uterine malignancy, I want to emphatically urge upon the general practitioner the fact that there is a *prophylaxis* to be used against this treatment, a preventive to be applied in place of, and to prevent, this living death in our patients, which we call palliative treatment. This is *early diagnosis*, first, (and this you can do) and second, *speedy removal of the diseased uterus*. I speak to the general practitioner on this subject because in the majority of case he is the first one consulted by these patients, and it is his advice that they will most surely follow. Remember that when the disease is once started every day is precious to your patient. Delay means death. If you have any doubts whatever about your diagnosis of a suspected case, send her immediately to some specialist, who by his constant familiarity with the disease will be able to settle the question. If you occasionally make a mistake and suspect a case of lacerated cervix to be cancer, it is no discredit to you. You may better make any number of such errors than *one* the other way.

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GENERAL DISCUSSION OF THE FIVE PRECEDING PAPERS.

DR. WALTER P. MANTON, Detroit. I did not intend to say anything on this subject, but this valuable series of papers ought not to go by without some discussion. So far as the pathology is concerned, Dr. Whinery has covered the subject so well that even if I were in a position to do so I could hardly add anything to what he has already said. The same may be said of Dr. Minar's paper. The diagnosis is to the general practitioner, and to us, of the greatest importance, and it is in this matter that all of us are constantly, I fear, making mistakes. The case cited by Dr. Carstens was an exceedingly instructive one, and we find such cases coming to us quite frequently. Moreover, we find cases of the variety called proliferating epithelioma which are so closely simulated by benign conditions that, without the aid of the microscope, it is absolutely impossible to distinguish between the two. I have seen such cases, where no microscopical examination was made, cured by appropriate local treatment, which conclusively proves that they were not of a malignant nature; and I have seen a great many cases, which apparently were exactly similar, where local treatment has not only failed to cure the disease, but has increased the malignant process and has rendered operative treatment out of the question.

Dr. Carstens has said that the microscopist often fails in making a diagnosis. I think he is right; but the reason the microscopist so often fails is because he is not thoroughly competent to make the diagnosis. Specimens are submitted to young men of very little experience in microscopy, and they are expected to distinguish between a variety of conditions, some of which they have never seen; and we often make our mistakes perhaps by depending too much on their

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diagnosis, the pathologist himself, or the microscopist, knowing very little about the disease.

Now, in regard to the surgical treatment, I agree with Dr. Carstens that it should be the radical removal of the uterus, which is the best treatment. Some years ago the late Dr. A. Reeves Jackson, of Chicago, waged war against the then beginning adoption of total extirpation of the uterus, and he collected a large number of cases, and some interesting statistics from Martin's clinic, if I remember rightly, in Berlin. I am speaking now particularly of cancer of the neck of the uterus. He compared the results of these operations with those obtained by the so-called Schroeder's method or high amputation. Certainly the statistics were in faver of high amputation in this class of cases. Dr. Carstens says he has seen cases of women, who are now in good health, upon whom he performed total extirpation of the uterus some three or four years ago. I have not had the good fortune to see cases go so long. I have had, however, one case where by adopting Baker's modification of Schroeder's high amputation the patient has lived between six and seven years now, and is at present in perfect health. That is the longest time I have seen in my own practice, although I had occasion many years ago, when house surgeon in the Woman's Hospital in Boston, to see a case that went, I think, ten years without a recurrence, and was still living when I lost track of her.

I agree with Dr. Carstens that the abdominal method of removing the uterus is far superior to the vaginal, in that it gives us a larger field for our manipulations, and we can see what we are doing. We have not to depend entirely or largely upon tactile sense. I believe this method is destined to supplant vaginal extirpation, and that the results will be vastly better if the abdominal method is used instead of the vaginal.

The late Dr. Strong, of Boston, had some remarkable cases that I remember reading about several years ago, in which he had removed not only the uterus for cancer, but had literally

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stripped the pelvic walls of the peritoneum and had resected portions of the bladder with excellent results, the patients living, if I remember rightly, for a year or two following these operations. So that in the matter of palliative treatment possibly sometimes we can do our patients a great deal more good and prolong their lives by opening the abdomen, and, if the cases are not too far advanced, as the case cited by Dr. Longyear, we may succeed in removing the diseased tissue, at least sufficient to keep the patient alive for a long time.

The papers to which we have listened are a very valuable series, and they can better be appreciated and read when the transactions shall have been published. I think the authors of them are to be congratulated upon their clear presentation of the theories which they have discussed.

Dr. J. A. Porter, Brooklyn. I had hoped the gentlemen would be able to present something somewhat different from what they have, and while the papers are good ones, as has been remarked, especially the papers on pathology, etiology, and diagnosis, they have presented nothing new, nothing more than we get in our textbooks and journals. It seems a little unfortunate that we are not able to produce new things more frequently than we do. In the absence of producing original matter, the next best thing is to produce condensations of various journal articles, and the essayists have given us excellent contributions on the pathology and etiology of this subject in that way.

I wish to say for myself that, although I have been practicing for twenty-six years, I have been unfortunate in my experience with cancer of the uterus. It has been my misfortune never to see a case recover, whether it came under my care early or late. This is altogether different from the articles we read in our journals and from the experience of my surgical friend Carstens, and I am discouraged about the whole matter, personally, excepting the fact that we have some reported cures. I have had as many cases as a practitioner in any small city, what I think is fully my share, and

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the whole class of cases has been bad. I got so discouraged that I did not undertake these cases for quite a while, and sent them to my surgical friends. They took them, operated upon them, and they died just as nicely as if they were not operated upon. [Laughter.]

DR. CARSTENS. Which is the easier death?

DR. PORTER. When you kill them, but I have not arrived at that state of mind that I can move them off in that way. I hesitate considerably about this whole matter, and the only encouragement I get is from such experience of my surgical friends as has been related here today. With this little encouragement I receive, I begin again hoping something better will come. Still I think, after all, the hopes we have lie on surgical lines, and we cannot do better than to keep on trying to do our best along this line.

There is one thing that was not mentioned in any of the papers, and that is the use of the erysipelas toxine. Possibly something along that line is going to throw a little more light on this subject, and give us more hope; and I trust some of the gentlemen here have had some experience with that. I have had none myself. I have tried almost everything else in the treatment of these cases, and I think I shall have to try this on my next case. One man has reported a number of successes with this treatment; and those who are using electricity are quoting a few successes.

So far as the palliative treatment is concerned, it is all the doctor has mentioned.

There is one other point that was not touched upon, and that is the positive pole of a galvanic battery for arresting hemorrhage. It has served a useful purpose in my hands, and I believe is better than anything else I have used. For immediate hemorrhage, tamponnade can be used for its control.

DR. HUGH MCCOLL, Lapeer. The papers which have been presented for our discussion are so thorough in the depart-

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ments which they have covered that I can add but little except to endorse what has been said. With regard to the treatment of malignant diseases of the uterus, as has been said, the first diagnosis is the important thing, and we find that the majority of cases come to us without a diagnosis being made, and it is too late then for us to expect to cure them. But even if a recurrence takes place one, two, or three years after total removal of the uterus, the woman has had a respite from pain, anxiety, and the fear of malignant disease during that time, and it is worth while to do the operation even if the patient goes only one year without a recurrence of the disease. I know a number of cases that have gone one, two, and three years, and two up to the present time that have gone five and six years without a recurrence of the malignant disease.

With reference to the palliative treatment I have nothing to add to what has already been said. I have seen cases treated by nitric acid in which the uterus was almost entirely worn away by the action of the acid, and the patient kept comfortable in that way for a short time, ultimately dying from exhaustion. The positive pole of a galvanic battery no doubt will arrest hemorrhage; but we must do something more than arrest hemorrhage; we must remove the diseased tissues with a sharp curette or spoon, and then apply the cautery thoroughly; the ball of the Paquelin cautery carried in, and the parts thoroughly cauterized, has given more relief in my experience than anything else.

Dr. W. H. Young, Nashville. My experience in the treatment of cancer of the uterus may be summed up in these words: Where these cases are let alone they die much sooner than if operated upon, and by early operative interference a number of months and even years are added to their lives. If live is worth anything, we should try to save it.

There are few cases of cancer of the uterus that apply to the physician for aid, and have their condition diagnosed at a sufficiently early period of development, to render a radical

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operation practical. But even in those cases which are far advanced, a palliative operation by way of removal of all of the diseased tissue by means of the curette or otherwise, is indicated, as it adds materially to the period of life and comfort of the patient, when compared with others of a similar character in which such measures have not been taken. I saw a case a short time ago which illustrates this point pretty well; a case in which the entire cervix was involved, and for which the patient refused operative treatment. She died in about two months from the time I first saw her. Contrast this with another case which I saw about a year and a half ago, which was practically in a similar condition. In this case our chairman, Professor Martin, having been called with a view to having a complete hysterectomy performed, this was deemed inadvisable, owing to the advanced stage of the disease. A high amputation was therefore made and all of the diseased tissue in the interior of the uterus removed by means of the curette. I saw this case a few days ago, and she is still enjoying good health.

Dr. J. B. Whinery. I have very little to say in summing up my part of this discussion regarding the pathology of malignant diseases of the uterus. It is true that I cribbed most of my paper from different sources, and that I have nothing new to offer on the pathology of the subject except a condensed resume of the latest literature along this line. Of late years, in connection with cancer, the parasitic theory has been gone into extensively, but probably there are more investigators against it then there are for it. The papers on this subject are voluminous. Parasites are pictured in our journals, and each writer seems to have a parasite of his own. Men cannot agree on the appearance of these parasites, and so far no method of artificial cultivation for the production of the organisms has proved successful. Quite recently there has been some work done along the line of yeast fungi in the production of new growths, but this is a new field of work, and so far little has been accomplished.

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As Dr. Manton says, the work of the microscopist cannot be relied upon at all times. I admit also that the pathologist works at a disadvantage, in that he is always pressed for a definite opinion on the subject, and he is not always able to give it. Certain changes bring about all sorts of shapes and conditions, and the microscope shows alterations present in the tissues. It is often a difficult matter to decide from the arrangement of cells and their nature whether they are really malignant or not.

DR. E. G. MINAR. I do not know that I care to say much on my paper, because it has not been discussed at all, save that one member made the remark that there was nothing new in it, and possibly that is all it needs. But I feel there is something new in it, or at least, if not new, that greater stress is placed on some factors which operate in producing malignant uterine diseases than was formerly taught. If it were not for the opinion of the primary local character of these growths, surgeons would not be operating and removing the uterus for cancer as they are today. I think that the profession generally recognize the fact, or, at least, are strongly impressed with the opinion, that these malignant growths are at first local in their origin, and that by removing them before system infection occurs, a chance of permanent relief is given the patient. I do not believe surgeons would be operating on these cases today if it were not for this belief. We have changed our views in this regard. It has been a gradual change—not occurring within the last few days or even years—but only as clinical experience and surgical intervention seemed to demonstrate its truthfulness. We now recognize the value of surgical intervention in those cases that are seen sufficiently early.

The doctor who just preceded me spoke of one form of sarcoma of the fundus of the uterus that is mentioned by Dr. J. Whitridge Williams, of the Johns Hopkins University, which seems to originate from retained decidual material in the fundus of the uterus. He has reported in his article in

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The American Journal of Obstetrics and Gynecology one hundred and forty-four cases, cited by various observers, of different forms of sarcoma of the uterus.

The results of operations by total extirpation of the uterus at the present day are encouraging. Boldt's article upon this subject in the October number of the American Journal of Obstetrics (1892), shows that 50 per cent. approximately of the cases that are operated upon by vaginal hysterectomy remain free from recurrence for a period of two or more years. I do not know that we can say positively in any case that the disease will not recur eventualy.

DR. EUGENE BOISE. I have very little to say on the question of diagnosis; but in reply to the gentleman who said that we brought forth nothing new, I will say that unfortunately most of us general practitioners learn more by having old truths hammered into us than we do by rushing off to societies and listening to what somebody said that was new; and were this not true, I venture to say we would all degenerate, sooner or later. Few of us have memories sufficiently retentive to remember year after year that which we read from time to time, and consequently we must thresh over old truths in order to make an impression that will be of value to us; and it is only by the continual presentation of papers on the same subjects that we are able to do this.

As to the question of surgical interference in malignant disease of the uterus, I wish to say one or two things. The technique of total extirpation has been so perfected that very little is now said as to the comparative safety of the operation, because the death rate is so low; but the great danger which we wish to overcome is the tendency to recurrence. How can we operate so as to prevent recurrence of the disease? Along this line, it seems to me, our advance must be made. The question of high amputation and total extirpation has been discussed thoroughly, and it is not necessary to dwell upon it at length before this enlightened audience, because if high amputation does good, total extirpation will do

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as much good, and, taking the cases as they come to us, will do more good, and the death rate is not much greater. Recurrence occurs because of two things, namely, inoculation of the raw surfaces by the cancerous tissue itself, or failure to remove all of the existing disease. Now, in order to prevent inoculation, most operators are removing, as far as possible, all of the soft cancerous tissue thoroughly before section is made to remove the uterus; in other words, all possible steps must be taken to prevent inoculation. Then as to the removal of the entire diseased tissue, the old rule as to the mobility of the uterus is not enough. That was the rule. It was laid down that as long as the uterus was movable and the broad ligaments could not be felt to be enlarged, total hysterectomy was the thing to be done, and I still belive that total hysterectomy in these cases is the operation to be done; yet, as ordinarily performed, we cannot say it will prevent recurrence. Microscopical examinations have been made of the cut surfaces of uteri removed by total extirpation, where to the eye and to the touch everything in the broad ligaments appeared to be normal, and the microscope has revealed nests of cancer tissue cut through in the middle, showing that part of the disease was left in the broad ligament, and part in the uterus. That would teach us the lesson that we must get as far away from the uterus as possible in our operations, and that we are justified in having this one fact continually impressed upon our minds, as well as the methods of extirpation. In order to cut off all possible infection of the system by the spread of the disease to the lymphatic glands and along the lymph channels, we must cut as far away from the uterus as we can.

Dr. Carstens is gradually leaving the vaginal route to perform abdominal hysterectomy, and I think he is, in the main, correct; but I believe the greatest promise of a complete and permanent result is by combining the two methods. I make a circular incision through the mucous membrane of the vagina around the cervix, and then make lateral incisions along the

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broad ligaments out to the ureters, dissect up the mucous membrane, and free the peritoneum from the anterior and posterior layers of the broad ligaments. Then I have advocated the application of short clamps to the uterine vessels. You can, with this lateral section through the mucous membrane, carry the clamps comparatively far from the uterus, so that you can crowd the ureter out at least half an inch further than its ordinary position. The clamp crushes the tissues, and the tissue which is crushed by it sloughs off, so that the broad ligament is removed farther from the uterus than you can get by the ligature. Then I go above through the abdomen, and tie the ovarian vessels as far from the uterus as possible; I tie the arteries above and cut down to meet my lower incision. It seems to me that this method of operating will enable us to take off more of the broad ligaments and cut the lymphatic vessels farther away from the uterus than any other method I am familiar with, and I offer it as something for you to discuss.

Dr. J. Henry Carstens. There is very little for me to add, as the ground has been thoroughly covered, and the whole question is one that first resolves itself into early diagnosis, and secondly, the variety of cancer, as well as the susceptibility of individuals to cancer. It has been shown by the papers presented today that women are especially liable to cancer, and if it was simply a question of heredity a man would be just as liable to it. It clearly shows that there is always some exciting cause for it, although there may be a predisposition, hereditary or otherwise, to cancer.

Dr. Reed, of Cincinnati, some time ago read a paper on the return of cancer, in which he showed by statistics covering a good many cases that in those instances where the diagnosis was made within six months of the occurrence of the disease, there was a small percentage of recurrences; while in those cases where the diagnosis was not made within nine months or a year after the development of the disease, the recurrences formed a greater percentage, and the disease manifested itself

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again in a very short time. These statistics proved that if the cases went less than six months there would be no recurrence in 80 per cent. of them for two years; and if there was no recurrence in two years after operation a patient might be considered cured. This shows the necessity of early diagnosis. I sometimes feel like Dr. Porter about the poor results of which he spoke. A woman will come to me, and I think her case is a good one for operation. I operate upon her, she gets well, and there is no recurrence. I operate upon another patient, and in less than a year there is a recurrence. Why is it? It cannot be that the cancer was more malignant, or that the patient was more susceptible to the disease, or that there was a peculiar condition of the lymphatic system in that individual which is not in others. Sometimes I think cancer germs have been carried by the lymphatics to other parts of the body and recurrence takes place in that manner. Again, when I operate upon another patient and she stays well for two or three years, I feel encouraged in my operative work. So I keep pegging away to the best of my ability, always, however, bearing in mind that if the uterus is not perfectly movable, it is a suspicious case. In a great many cases I refuse to operate. In some I make use of the palliative treatment when they are too far gone, and I find the mortality is a great deal larger than in doing total hysterectomy, because the surrounding tissues are more or less involved and we cannot control the bleeding vessels; consequently the patient dies from secondary hemorrhage or shock, which she would not do if her case were taken in hand sufficiently early.

I have had a number of cases upon which I have operated for laceration of the cervix, and suspecting that some of them might be malignant, I have removed a little of the diseased tissue, submitted it for microscopic examination, and found it was malignant.

In these cases a period of transition takes place from an adenomatous condition to the cancerous condition, and we

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cannot tell where the adenoma stops and the cancer begins. We do not know where the line of demarkation between the benign and the malignant forms, but they surely slide from one into the other. Some of the cases are malignant adenoma; others are benign.

The remarks of Dr. Boise with reference to the importance of early diagnosis are very timely. We must keep hammering away at this subject, and impress upon our patients the importance of it, and sometimes it takes a sledge hammer to do it; at the same time the doctors must not be blamed, particularly the general practitioners. I have seen cases where the women were perfectly well; they did not have a symptom; in fact, did not know that there was anything the matter with them until a severe hemorrhage occured; then they usually went to the general practitioner, and he found the vagina filled with a cauliflower growth, and immediately sent the cases to me or some other surgeon. As a rule, the patients are to blame. Some of them have a peculiar feeling; they dread it; they know they have got cancer or some kind of growth, and they keep away from the doctor as long as they can, when finally they are compelled to consult a physician, and receive the verdict that nothing can be done—a most heart-rending thing.

As far as the technique of the operation is concerned, so much has been said that I do not care to occupy much more of your time; but the operation that Dr. Boise spoke of, the combination of vaginal and abdominal hysterectomy, I have performed in some cases; but I select my cases carefully. Sometimes I do the vaginal, and sometimes the combined operation, or the abdominal, according to the case. The cases must be carefully selected. Sometimes I start my operation with the vaginal method, find out the trouble, and perhaps finish up with the abdominal. According to Pean, Sigond, Jacobs, and others, the only correct way is to remove the uterus by the vagina in cases of pus tubes, etc.; I have not agreed to that yet.

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DR. MARTIN. How did Dr. Reed know cancer had been growing six or eight months?

DR. CARSTENS. He took some twenty-five cases where there was reasonable assurance that the disease existed about six or eight months, or less, and then he took other cases where the disease beyond question had existed for more than six months.

DR. MARTIN. My experience has been that patients do not have, in the majority of cases, symptoms referable to cancer, and that is the reason I asked the question, and I ask for information.

DR. H. W. LONGYEAR. In the palliative treatment the use of electricity has been mentioned by one of the speakers for the control of hemorrhage, but I agree with Dr. McColl that we must do something more than to control hemorrhage, and that is to remove the soft, broken-down tissue, and you can hardly do that by using the positive pole of a galvanic battery. But it is certainly a useful method of arresting hemorrhage in fibroids where there is not a large mass of decomposing tissue to remove. Supposing you do control hemorrhage by applying the positive pole to the mass and leave sloughing material there; you only have temporary benefit, consequently the decomposing material must be removed with the curette.

There is one point in the diagnosis upon which I desire to say a few words, and that is in the use of the microscope. I am sure from my own experience that we must not depend upon the microscope alone as a diagnostic aid, but must have the macroscopic evidence as well. I have had some cases in which I have depended to a large extent upon the microscope for cancer of the uterine body, where the uterus has been large, and there has been an ichorous discharge with some hemorrhage, and I have curetted portions of the growth and the pathologist has pronounced it cancer. With this evidence I have removed the uterus, and on section there was no real evidence to the unaided eye that it was cancer. In these

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cases the disease has not returned. The idea that was advanced by Mr. Tait, I believe, has often occurred to me in regard to those cases, although I do not endorse it. He says that after the removal of a supposed cancer, if the disease returns, it was a cancer; if it does not, it was not a cancer.

I have, on the other hand, had cases in which I thought cancer had started, and I have therefore submitted scrapings of the diseased mass to a pathologist, and he has declared that the material was benign—one case especially I have in mind, which came from the country. I simply curetted and cauterized the affected parts, trusting to the microscopic evidence, and she returned in about six months with cancer so well-developed, so extensive, that it was impossible to remove the uterus.

In another case of an apparent cauliflower growth in the site of an old laceration of the cervix, I was in doubt. It was in a young woman, but it did not have the hard texture of a cancerous growth. I cut off some of it, submitted the specimen to a pathologist, and it was declared to be cancerous. I decided to operate, but I could hardly bring myself to take that young woman's uterus out, for it seemed to me the rest of the evidence did not bear out the diagnosis. But I had her on the table under the influence of chloroform ready to do whatever seemed best. Not wishing to assume the entire responsibility of doing a simple operation under these circumstances, I did a trachelorrhaphy only after consultation with Drs. Carstens and McGraw, and decided to await the result. She made a perfect recovery and has been well a year or more. So we must depend on other evidence besides the microscope.

In speaking of the methods of operating, there is one method that has not been touched upon, and that is the Pratt method of peeling out the uterus without ligating the uterine arteries. This method is advocated in cancer of the uterus. It is a pernicious way of operating for this disease, for we do

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not know how far the disease has extended, and if we peel it out, cutting down to the muscular structure, we are very likely to leave something in the lymphatics which will favor a return; whereas, if we get as far away as possible from the uterus we are much more sure of removing the entire disease. The so-called Pratt method or operation should be entirely excluded for cancer of the uterus.

DR. J. N. MARTIN. The difference between doing work in the dark and in the light is well illustrated in vaginal hysterectomy versus abdominal hysterectomy. In vaginal hysterectomy all operators say, keep close to the uterus as much as possible because you do not know where you are. In abdominal hysterectomy we have an opportunity to see, and to go as far from the uterus as possible without injuring important structures. This is very important in malignant disease of the uterus.

There is one thing I wish to speak of, and which was alluded to a few moments ago by several men from Detroit. Dr. Carstens said the impression is with patients that they should keep away from the surgeons; that they should go to them as a last resort, etc. I remember a few months ago (I think it was last fall, in October or November), some physician made an attack, I suppose, on Drs. Carstens, Longyear, and Manton, and others, who are reliable gynecologists in Detroit, saying in a general way that they were operating altogether too much. Here is the lesson. I was surprised to hear the other day that a doctor made a statement in the press in a long sensational article, saying that is the usual history of these cases. Several doctors replied the next day in the paper, and one or two of them said that they wanted it distinctly understood that they only advised surgical operation as the last resort. In my opinion surgical opertions should be the first resort in some cases; in others it should be the second resort, and in others the last resort. But it is for the surgeon and not the patient to say whether it is to be the first or last

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resort, and this impression has gotten abroad among the laymen, and the doctors are a good deal to blame for it when they make such statements in the public press where the laity read them. So I believe the patients are not fully to blame for looking upon surgery as a last resort for the relief of their condition.

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THE PRESENT STATUS OF THE BURIED ANIMAL SUTURE IN ABDOMINAL AND GYNECIC SURGERY.

H. W. LONGYEAR, M. D.
Detroit.

Ever since the performance of the first successful ovariotomy by Ephraim McDowell the problem of suitable material with which to ligate blood vessels and pedicles, and close the abdominal wound, has received the most earnest study of the abdominal surgeon; for after much experimentation of a nature costly to human life, the fact was determined that it was impracticable to treat sutures and ligatures, placed within the peritoneal cavity, in any other way than by cutting short and leaving them in situ. Before the dawn of the new day of asepticism inaugurated by Lister, the wisdom of leaving foreign material within the peritoneal cavity was generally questioned, as it often resulted in abscess; and peritonitis often following as the result of supposed peritoneal irritation, the question was a very grave one, and severely taxed the courage and ingenuity of the pioneer surgeons of that epoch. Extraperitoneal treatment of the stump by the clamp; the end of the stump seared by actual cautery; ligatures left long and hanging out of the abdominal wound; and other devices employed to avoid leaving the ligatures within the peritoneal cavity, are now matters of history; but their memory is still fresh in the minds of many of us. Since the knowledge of asepticism has demonstrated that it was the *microbe* that caused the peritonitis and the abscess, and not the ligature material, almost every conceivable material in the shape of ligatures

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and sutures has been placed within the peritoneal cavity. India rubber, iron and siver wire, silk, linen, buckskin, chamois skin, strips of fascia lata, catgut, silkworm gut, tendons from many kinds of animals, etc., have been used for this purpose, and each has been, in its turn, vaunted by its advocates as a most excellent material for the purpose used. Quite a variety of these materials still have their advocates among the most eminent surgeons of the world. One uses silk exclusively, and buries it anywhere and everywhere, and gives excellent reasons for not using any of the other materials. Another uses a combination of buried sutures of silk and silver wire, while another surgeon of equal eminence uses catgut for all sutures and ligatures, both buried and externally, and so on, each using the material that he believes to be the best; and as they all claim good results, there is doubtless virtue in the most of these materials when properly used. However, the fact remains that nonabsorbable materials, when left within the tissues, often give rise to local irritations by their presence, and in many instances cause much pain and discomfort to their possessors, even if they have been aseptically placed, and do not at last—as is often the case with the septic suture—come to the surface by ulceration, or as a part of the contents of abcess formation. Knots of silk, silkworm gut, silver wire, and similar nonabsorbable materials, left in the tissues, remain a constant menace to the comfort and health of the individual retaining them. There are few surgeons of large practice who cannot recall many of these cases of post operation troubles—generally called *neuralgia of the stump*—that have tried patience and skill to the utmost. To avoid using such materials, with their concomitant disadvantages, and to obtain one that would serve every useful purpose that a good ligature and suture should, and yet disappear when its usefulness was past, many experiments have been tried, which have resulted in determining that dead, aseptic, animal material, when buried in the tissues of a living animal, will become entirely absorbed, the length of time for its disappearance vary-

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ing with the nature of the material, and its previous preparation, and also somewhat with the age of the animal, and the consequent vitality of the tissues in which it is placed.

The use of animal material for the ligation of blood vessels was known even to the ancients, but the use of such material for this and other purposes where it might be buried in living tissue never became popular, owing to the fact that closed wounds usually gave bad results from the fermentation which took place in them. For this reason it was quite the fashion to treat all wounds by the open method, which was tedious, but safest for the patient, as the layer of granulations which soon formed acted as a safe barrier against invading germs.

The discoveries of Lister opened the way for making the use of the buried animal ligature and suture a safe procedure. Successful experiments are, however, on record of the use of a variety of materials by a number of surgeons at an even earlier date. Prof. Plyrick, of the University of Pennsylvania, was probably the first to introduce the animal ligature into surgical practice. He used chamois leather, and rolled the strands on a marble slab to make them round; Dr. Hartshorn used strips of parchment for ligatures; Dr. Jamison, of Baltimore, used buckskin ligatures for a number of years; and Dr. Ephraim McDowell tied the pedicle of his first case of ovariotomy with a buckskin ligature. Prof. Paul Eve, of Nashville, Tenn., wrote, in 1876: "I have been in the habit of using the sinews of the deer for ligating vessels, for forty years. I have never used carbolized spray. The tendons of the deer, dried and torn in shreds, and rolled into ligatures, are what I employ. They are absorbed; I have occasionally used them as sutures, but generally apply silk for this purpose." These are but a few examples of many that tend to show that surgeons have, probably, from the time of the application of the first ligature to a bleeding vessel, been aiming to use such material for the purpose as shall become absorbed and cease to act as a foreign substance in the

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tissues after the object for which it was applied has been attained. Catgut was used in these early times by many surgeons, but the nature of its preparation rendered it often septic, and the bad results occurring therefrom doubtless led to that general search for other efficient and less dangerous material. Catgut even now, with our knowledge of microbic life and germ fermentation, is often found to be septic, by reason of incomplete sterilization in its preparation. Any animal material is liable to be dangerous because of the same reasons, but to a degree that is infinitely less than that of catgut, as the latter material is made especially septic in its primary preparation, because of the process of maceration and partial decomposition that it is then put through. The germs that are propagated at this stage of its preparation must all be destroyed at a later time by some other process, or the use of the gut will be attended with disaster. This danger does not attend the preparation of ligatures and sutures made from other animal material, as their primary preparation is cleaner and less complicated, usually consisting in simply drying the tendons, strips of fascia, etc., immediately on their removal from the bodies of healthy animals. This renders subsequent treatment preparatory to surgical use a comparatively simple matter, as any germs that they may harbor are not rolled up inside of them, as is the case with the catgut, but will lie on the outside of the strand, and are easily attacked and destroyed by the germicidal agencies used. The chromicized catgut, as usually prepared and preserved in carbolized oil, has been found to be unreliable, the large strands almost invariably containing bacteria. Catgut prepared according to a method of Dr. Reverdin, of Geneva, Switzerland, has given the best results in this respect. He first takes crude catgut, and subjects it for four days to a constantly increasing temperature, maximum, 140° C., then places it in oil of juniper for one day, and preserves it in alcohol until used. The trouble with catgut prepared in this way is that it is not sufficiently hardened, and often becomes

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absorbed so rapidly as to destroy its tensile strength before its office has been accomplished. This defect is not of importance in its use as a ligature, as the time of compression required to control hemorrhage is comparatively short; but when used as a suture, it often allows the wound to be torn open before firm union has been established. The gut may be sufficiently hardened with chromic acid to obviate this objection to its use. I know a number of surgeons who use catgut quite extensively, both as a buried ligature and suture, but, as far as I know, each surgeon prepares his own material, as he believes that it is only in this way that he can be sure of the aseptic condition of the gut.

Dr. Marcy, of Boston, has rendered the profession a great service by urging upon their notice from time to time for a number of years the usefulness of the buried animal suture and ligature, and the especial adaptability of the tendons of the tail of the kangaroo for this purpose. This material was doubtless used by a few surgeons prior to Dr. Marcy's use of it, but to him certainly belongs the credit of introducing it generally to the profession. He has written a number of articles on the subject, one of which, containing a very complete resume of the subject, was read at the meeting of the American Association of Obstetricians and Gynecologists in 1889, and first served to draw my attention especially to the subject, and from which I have secured some of the data for this article. The tendons as taken from the animal and dried are of varying lengths, averaging about fourteen inches, but occasional pieces being as much as two feet in length. They vary in diameter from the size of the finest silk to that which is too thick for surgical use. The tendons are removed from the animal and dried in the sun, and sent to this country in that condition. The strands not being round but somewhat flat in form renders the tying of them quite safe from slipping, and the ultimate fibres of construction of the tendon running parallel to its length causes it to be very firm and inelastic. It is quite easy to subdivide each strand after maceration in

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warm water, but this should not be done, as it results in making the material rough and less compact in structure. Until quite recently Dr. Marcy has received and prepared all of this material that has been used in this country that I am aware of, and it has been with the material prepared by him that I have had the greater part of my experience. But during the last four months, having obtained some of the crude tendons through H. J. Milburn & Co., of Detroit, who, at my request, succeeded in importing some direct from Australia, I have used only the material prepared by myself. I prepare it by first boiling in alcohol for one hour; then I use the method recommended by Sir Joseph Lister for the preparation of chromicized catgut, his directions for which I will quote in full: "Dissolve one part of chromic acid in four thousand parts of distilled water, and add to the solution two hundred parts of pure carbolic acid, or absolute phenol. In other words, I use a one-to-twenty watery solution of carbolic acid, only that the carbolic acid is dissolved, not in pure water, but in an exceedingly dilute solution of chromic acid. But, minute as is the quantity of the chromic acid, it exerts when in conjunction with carbolic acid a most powerful effect upon the gut. The first effect of the addition of the carbolic acid to the chromic solution is to change its pale yellow color to a rich golden tint; but if the liquid is allowed to stand without the introduction of the catgut, it changes in the course of a few hours to a dingy, reddish brown, and a considerable amount of gray precipitate is formed. If, however, catgut about equal in weight to the carbolic acid is added as soon as the ingredients are mixed, the liquid retains its brightness, and the only change observed is a gradual diminution of the depth of the yellow color, the precipitate, which I presume still occurs, taking place in the substance of the catgut. As soon, therefore, as the preparing liquid has been made, catgut equal in weight to the phenol is introduced into it. If you have too large a proportion of catgut, it will not be sufficiently prepared; if you have too small a quantity, it may run the

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risk of being over-prepared: At the end of forty-eight hours catgut steeped in such a solution is sufficiently prepared. It is then taken out of the solution and dried, and when dry is placed in a one-to-five carbolic oil. It is then fit for use."

When it is desirable to make the material extra hard, it can be accomplished by increasing the chromic acid to double the quantity, and allowing the tendons to soak in the solution for a day or two longer. Care should be observed not to use too much chromic acid, as it is possible to make the tendon brittle by too strong treatment. For closing wounds in the peritoneum, cellular tissue, and skin, tendon with very little hardening will serve the purpose, as these tissues unite and become firm rapidly; but for closing wounds in aponeurotic tissue, which requires much more time to become firmly united, the extra hardened suture is the safest, as it will be absorbed less rapidly, and so insure the firm union of this structure.

My experience has been entirely with this material, and has extended over a period of about four and one-half years, during which time I have used it for both ligatures and sutures in fifty-seven cases of cœliotomy, with and without drainage, and I have yet to see my first case of post operative hernia where this material was employed. During the last twenty months I have used the tendon in a large number of operations for ruptured perineum, in which operation, in conjunction with the split flap method of denudation, or more properly, *incision*, it has given me the most gratifying results. I have used it in a number of cases of herniotomy, and in many minor plastic operations about the female genitalia, with the same satisfactory results. The greatest advantage of the application of the buried suture to the operation of perineorrhaphy is that by it the parts may be *built up* by degrees, each muscle joined to its fellow separately if desired, one side built up higher than the other if necessary to readjust the parts back to their natural shape, etc., thus elimating as far as possible the great element of chance that per-

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tains to, and causes so many failures in, the use of the *en masse* suture in this operation.

The *manner* in which the buried animal suture is used is of the utmost importance. It cannot be carelessly used, but must be applied with the most strict attention to every detail of its technique. When used with this care it gives one of the most beautiful and satisfactory results in surgery, and approaches as near to the artistic and æsthetic as anything in our art is ever likely to do.

I wish to emphasize this point of the *proper use* of the buried animal suture. If not properly applied, it were better not to use it at all. The surgeon should pass his apprenticeship in the surgical workshop, and also understand thoroughly the laws governing septic processes, and the means to combat them, before operating with this material, just as the finished artist must first perfect himself by the drudgery of the fundaments of his art before he can essay to produce a successful work in color. The picture without the apprenticeship would be a botch, and so would the operation that should be performed without due regard to the fundamental laws that govern modern aseptic surgery.

A closed and sealed wound with dead animal material in it, *plus* septic infection, is obviously more dangerous to the patient, locally and generally, than a wound closed by the old method under the same septic conditions. So, unless your method of asepticism is practically and scientifically correct, you had much better stick to the old plan of the *en masse* suture.

Three requisites are absolutely necessary for correct results with the buried suture method, and they are:

First.—An aseptic suture.

Second.—An aseptic wound.

Third.—The wound kept aseptic till union has occurred.

The first requisite can be attained by preparing your own suture material according to the formula given, and then keeping it safely from contamination. The second requisite can be attained only by the use of aseptic instru-

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ments, sponges, water, hands, etc., that come in contact with the wound. The third condition is best attained by sealing the wound with collodion, after washing with ether; but other means may be used to accomplish the same object. One important point not to be overlooked is that no avenue of communication whatever must be allowed by which germs may pass into and infect the stitches that are buried in the wound. During the first year that I used this method I did not realize the full importance of this last requisite, and the consequence was that about twenty per cent. of my cases were attended with more or less suppuration. My mistakes were two in number, and consisted, first, in not sealing the wound hermetically, and second, in placing *en masse* sutures in addition to the buried sutures.

This last is a common error in the use of the buried suture, and a most dangerous one it is, for while it is present in the tissues it keeps open a track for the easy ingress of those pyogenic germs that are known to have their habitat in the epidermis. Then when they are withdrawn, the end that is dragged through the tissues may carry with it, and implant, the germs of infection. I had several cases of this kind where the wound was perfectly healed and healthy in every respect till after the removal of the silk worm gut *en masse* stitches on the tenth or twelfth day, when inflammation followed by abscess occurred. Some definite method of preserving the material from contamination is necessary to be observed. My plan is to roll each strand into a little coil by itself, divide and place them in two bottles of the carbolic oil, one containing the fine and one the coarse strands. When preparing for an operation, the number of each kind needed is calculated as nearly as possible, removed from the bottles with sterilized hands and forceps, unrolled, the excess of oil wiped off with a towel wet with a 1-200 bichloride solution, and then wrapped, one by one, in this towel, the coarse ones for ligatures in one end, and the fine ones for sutures in the other. By this device the strands may be uncovered separately and

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not handled till ready for use, and any that are left uncovered may be returned to the bottles after the operation. If any are handled and not used during the operation they are thrown away.

In applying a ligature to a pedicle I use a method which I call double partial ligation, which consists in placing the ligatures in such a manner that the stump may be slightly nourished by a small amount of superficial circulation. With a small pedicle this is accomplished by using two ligatures, each of which transfixes the margin of the pedicle opposite the other, and tying one above and one below the other. A very thick pedicle may require several ligatures, but the same principle is here carried out, allowing each ligature to lap beyond, but not come in contact with, the preceding one. I believe that by this method I save my patients much of the post-operative discomfort, to say the least, that is often the result of leaving the large mass of dead tissue composing the stump for nature to dispose of by the slow process of absorption. In closing the flaps of the cervical stump after abdominal hysterectomy a heavy strand is used, and the flaps brought evenly together with interrupted sutures; while in closing the peritoneum over the stump a continuous suture of fine tendon is used, the finer the better, as this membrane will unite very quickly, and only needs, really, to be held in apposition but a few hours to insure the complete closure of the peritoneal cavity at this point. The incision in the parietal peritoneum is closed in the same manner, using a fine, continuous suture, tying and cutting it off when the end is reached, and not passing on to the next layer with the same strand. The wound is then washed freely with a 1-5000 bichloride solution, sponged dry, and the aponeurotic sheath of the recti muscles closed by the use of a carefully selected, medium sized, strong tendon, and the continuous suture used, which is tied and cut off as with the previous layer. If the opening is longer than two inches this suture should be made fast by a knot at the end of each inch, so as to guard against the possibility of a

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weak spot in the tendon giving way and allowing the whole incision to open. The wound is again flushed with the bichloride solution and sponged dry, when the subcutaneous fatty tissue is brought together by one or more layers of running parallel sutures, the needle passing always deeply into the loose tissue, and only moderate traction being used. After making this suture fast, the last layer which approximates the skin is applied. The latter is a very important part of the operation of closing the wound, as it must be so placed as to be entirely buried, and yet approximate the edges of the skin accurately together. This is accomplished by catching the suture in the under layer of the skin; the needle being inserted each time parallel with the surface of the skin and opposite the exit of the last stitch. The suture, when placed in this manner beneath the entire length of the cutaneous incision, and drawn upon, will close the wound accurately. The end is then made fast in the *depth of the wound*, and not passed through the skin and cut off as some surgeons dispose of it, as by the latter method germs may be dragged back through the skin. The wound with skin around it is then thoroughly washed with bichloride solution, dried off, and sulphuric ether poured over it. The application of the ether is necessary to prepare the surface of the skin for the collodion, which will not adhere closely if this is omitted. The collodion is then applied freely with a camel's hair pencil, and, while applying, a thin film of cotton is incorporated with it to give added strength. When the film of collodion is formed, the bandage is applied, usually with squares of bichloride gauze and cotton laid over the collodion. The collodion may be removed in nine or ten days, the wound requiring no other attention.

In cases requiring drainage the wound is closed in the same manner up to within one-quarter of an inch of the drainage tube. This space is then closed with one *en masse* silkworm gut suture, passed through skin, fascia, muscle, and peritoneum, and in such a manner that it will not come in contact with

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the buried sutures. When this suture is tied and the wound sealed, all communiction with the track of the tube is cut off, and the buried sutures will remain aseptic. With the abdominal incision closed in this manner, with perfect asepticism and technique, the union will be immediate, and post operative hernia an impossibility. Experiment has demonstrated that when incised edges of tissue are united by buried animal suture, the line of union becomes ultimately the strongest part of such tissue, by reason of the fact that, coincident with the absorption of the suture, rapid cell proliferation takes place, and a band of living connective tissue cells replaces the line of the suture. To obtain the best results from the operation of closing the abdominal wound, it is necessary that like tissue be joined to like tissue in every instance—peritoneum to peritoneum, fascia to fascia, fat to fat, and skin to skin, and not matted together in a haphazard way, as it is only by renewing the continuity of each layer by itself, and in such a manner that adhesions between the layers will not remain, that the natural and unimpeded functional action of the parts will afterwards be preserved. It is rarely necessary in this operation to touch the musuclar tissue with the needle, as the rectus of one side is usually only pushed to one side, and rarely cut; and even when cut or torn longitudinally, sutures are not necessary, as the fibers will naturally lie together without force. If the fibers are cut across they must be closed by suture, a fine strand being used for that purpose, and care taken not to cripple the muscle by sewing it to adjacent tissues.

The closure of the perineum by this suture has yielded more satisfactory results to me in restoring the pelvic floor to its normal condition than the application of any other method in my experience. It is especially adapted to Tait's split flap method of denudation, which I almost invariably use. In cases of incomplete rupture of the perineum its application is quite simple, a number of rows of fine tendon sutures, partly interrupted and partly continuous, are inserted, beginning at

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the farthest point of the dissection and approximating the opposite sides to each other, gradually, till the skin is reached; this is brought together by the same lacing stitch as before mentioned in the closure of the abdominal wound, and the operation finished by sealing with collodion in the same manner as with the abdominal incisions. In cases of complete rupture of the perineum, the operation by this method is complicated by the necessity of closing a notch in the mucous membrane of the rectum and vagina, on whose surface collodion will not adhere sufficiently to seal the seam hermetically. I get over this difficulty very satisfactorily by first closing these parts externally by the use of a very fine running catgut suture and the application of aristol to the lines of union. By the previous use of a bichloride douche in the rectum, and subsequently placing there a suppository of iodoform, infection of the deep parts at the seat of operation through this channel is prevented. The buried sutures are then used in the same manner as in the cases of incomplete rupture, excepting in approximating the ends of the sphincter ani muscle, when great care is taken to find and pick up the ends of this muscle and unite them with two separate strong tendons. With all of the sutures great care is taken that they do not pass near enough to the external catgut sutures to come in contact with them, as infection might thus take place. When properly placed, nature rapidly places a barrier of living tissue between the external and internal layers. The aristol adheres very closely and will usually protect the catgut from infection until its absorption occurs. The skin suture and the sealing of the rupture are the same as with the incomplete rupture.

During the last two years I have used this method in a large number of perineorrhaphies, and have not had an abscess occur in one, and union has taken place in all. The nearest approach to an abcess was in one case of very bad complete rupture, in which a slight purulent discharge from the anus appeared and persisted for about three weeks after the patient began to sit up, but it did not interfere with the

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success of the operation in any way. I also had an accident with my first case in the breaking open of the wound during defecation, owing to the fact that I used one continuous suture for the whole operation, and it giving way in a weak spot, the whole perineum was torn open. From this case I learned the lesson of mixing the sutures, using both the interrupted and continuous. The case was evidently aseptic, as it healed promptly, on reclosing it, without further treatment.

In conclusion, I may state, as a result of my experience, that an aseptic animal suture placed in an aseptic wound by an intelligent hand, and the wound hermetically sealed, will give the most perfect mechanical results and the most beautiful and aesthetic finish of any method of surgical procedure known to me. The beginner, however, must be reminded that, like liberty, success in aseptic surgery can only be achieved by the price of *eternal vigilance.*

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DISCUSSION OF DR. LONGYEAR'S PAPER.

DR. HUGH MCCOLL, Lapeer. The subject of animal sutures is an important one, and our chief difficulty lies in rendering the sutures perfectly aseptic and keeping them so. It is no small job. We have to do the work ourselves if we wish perfect sutures. I have used catgut sutures, preparing it myself, and I have some catgut sutures that I prepared four years ago, which I am satisfied are perfectly aseptic today. I have good results from this suture material, and I do not allow anybody to touch these sutures except myself, and I think if we do that with our catgut sutures, likewise with kangaroo tendon, we can get the good results which Dr. Longyear has reported today. In several operations I have used the kangaroo tendon almost entirely with excellent results in closing the abdominal wound. But for the average physician who is not always very careful with these animal sutures, he had better leave them alone and use something else that he can sterilize at once. Silk or silkworm gut sutures will produce the best results in the average hand who is not thoroughly impressed with the necessity of having sutures thoroughly aseptic, as well as the wound.

A MEMBER. What particular method do you use in rendering the catgut aseptic?

DR. MCCOLL. I use Martin's method, by washing it with ether to remove the fat, oily substance, then immerse it in one to one-thousand aqueous bichloride solution for twenty-four hours, then in alcohol and juniper, in which I keep it permanently. My kangaroo tendon I have not prepared myself. I use Marcy's tendons for that purpose, as prepared by him. But my catgut sutures I prepare according to the formula of Martin, of Berlin.

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DR. W. P. MANTON, Detroit. I endorse all that Dr. Longyear has said in regard to the animal suture. I have been using it, in my abdominal work particularly, for a long time, but not quite as long as Dr. Longyear has, and I can say with truth that since I have adopted it I have not had a single case of hernia. I remember a number of years ago I had an opportunity to see a good many different men perform abdominal sections, and it was a matter of considerable interest to me to notice the various ways of closing the wound. I remember particularly that Sir Spencer Wells was exceedingly careless as an operator. He would often run the needle through the peritoneum, then up through the skin without touching the fascia at all, using the interrupted Chinese silk suture. The result of this carelessness was that he had a great many cases of ventral hernia following his operations. And although he had an enormous experience in this line of work, his assistants and others connected with him in the Samaritan hospital had decidedly better results, as far as the wounds went, than Sir Spencer Wells himself. I practiced the method of using the interrupted silk suture, until the introduction of the buried suture by Dr. Marcy. In some of my earlier work I had cases of ventral hernia. I had the satisfaction on last Monday of operating on a case where I had previously used the interrupted silk suture, in which the cicatrix had stretched out so that there was a very large umbilical hernia. I think the first operation was done four years ago.

There was one statement in Dr. Longyear's paper that I do not quite understand; he said something to the effect that we should learn to do the method *properly*, and that it was his plan to seal the wound with iodoform collodion; then he had no suppuration or abscess formation following his operations. Now, I hardly understand what he means by the term "properly." If operative procedures are to be judged by the results we get after we have done certain things, then I can say from my own experience that the collodion method is no more proper than the closure of the wound without it. I

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rarely, if ever, have suppuration in the line or track of my buried sutures. It is a long time since I have had the formation of an abscess, and I do not believe that if the wound has been sealed with collodion and the original dressings have not been removed, the results will be any more satisfactory than in my cases without the collodion dressings. I have always made it a practice to see that the skin about the wound was thoroughly cleansed, and the wound itself thoroughly cleansed before applying my dressings. I always use iodoform gauze over the wound, and I make it a practice to dip the gauze I apply in the carbolic solution in which my instruments are placed. I use carbolic acid alone for my instruments, and I have not for a long time seen any suppurative process going on in the wound. I think if our sutures are thoroughly sterilized, if the surgeon himself is clean in all particulars, his instruments rendered sterile as well as the dressings, and the latter properly applied, we can get the best results by the use of the buried suture of kangaroo tendon. I can only speak for myself. I know Dr. Carstens uses collodion a good deal as I have seen him apply it, but from my own experience I do not think it is necessary. It may be a good thing, but I should not call it unqualifiedly "the proper method."

Dr. J. Henry Carstens. I have written and talked so much about the buried animal suture and kangaroo tendon from time to time, that I do not feel justified in consuming very much of your time. We are all children of habit. Our friend Manton uses carbolic acid on his instruments; I seal up my wounds with iodoform collodion, and continue doing so; if I go down to Buffalo, I find that my friend Mann dusts his wounds with acetanilid. There is only one thing about it, and that is to keep the wound absolutely and hermetically sealed. It is for the express purpose of preventing post operative infection. I am sure a good many surgeons are careful and try to do aseptic work; but some of them put on dressings, and probably allow the assistant or nurse to loosen the perineal straps, and as the patient rolls about in bed the bandage in

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some way slips, the dressings are disturbed, and microbes are thus permitted to gain entrance, and in the course of five days or so we have an infected ligature, followed by an abscess ten days after the operation. The point that Dr. Longyear makes, and which I endorse, is to do it properly; not only make the wound aseptic, but keep it so, and if you properly seal it with collodion you really do not need a dressing. It is largely a habit in applying dressings in these cases, and I do not think they are of much account. Personally I would just as leave have nothing on the wound, if we are particularly careful to see that nothing gets into it before healing has taken place.

DR. MANTON. Dr. Carstens believes that we might put the patient to bed without applying a bandage. I do not think he means that exactly, for he would put on a bandage to relieve the strain that will eventually come on the abdominal wound. Instead of placing dressings immediately about the wound, then applying a cloth binder, I make it a practice to strap on the dressings with two-inch-wide adhesive plaster, making an abdominal corset as it were, and that keeps the dressings from being dislodged if the patient rolls about in bed. It keeps the microbes out that Dr. Carstens speaks of, and keeps the wound sweet and clean.

DR. MARTIN. With reference to the application of iodoform collodion, I would like to ask Dr. Carstens whether he has any guarantee that collodion won't crack, provided the patient moves a good deal and rolls about?

DR. CARSTENS. I do not think it does.

DR. MARTIN. I have seen it crack in a number of cases.

A MEMBER. Do you incorporate cotton?

DR. MARTIN. Yes, sir. It takes but a small crack for the microbes to crawl through, and I prefer to put some protection over the collodion to keep the dust out. The main thing is to keep everything clean.

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DR. LONGYEAR. About the only antagonist is Dr. Manton, whom I will try and answer in a "proper" way. He evidently lost sight of a part of my little speech, when I said that the wound was *improperly* treated when the en masse sutures were used in connection with buried sutures, and when it was not sealed. By eliminating the en masse suture and sealing the wound, I considered it was properly performed.

DR. MANTON. You are talking about abdominal wounds?

DR. LONGYEAR. I am talking about the use of the buried suture in any wound. In perineorrhaphy you could not possibly keep it clean without sealing. The chances are also that you would not be able to keep a herniotomy wound clean without sealing it with collodion. So I make it as a general statement in the use of the buried suture, that it is safer when the wound is sealed. I believe if you do it in *all* cases where you use the buried suture that your results will be more nearly perfect than if you do not use it. It is certainly very apparent that a perineorrhapy made without sealing the parts would be very liable to infection, as would also herniotomy in the child.

I think Dr. Manton gives himself a great deal more trouble by applying adhesive plaster about the wound than he would if he were to use a nice cover composed of a small amount of collodion. It makes a neat, clean covering that you do not need to touch afterwards; whereas adhesive straps are dirty, and cause an eruption, and make the patient uncomfortable.

DR. MINAR. Do you use the tendon suture in the closure of primary (immediate) laceration of the perineum following child birth ?

DR. LONGYEAR. I have never used it in that way. My friend, Dr. Gailey, has used it in such cases with perfect results. I have not dared to use it in these cases because of the impossibility of completely sealing the wound.

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RETRO-DISPLACEMENTS OF THE UTERUS.

J. L. McLAREN, M. D.
Saginaw.

Mr. Chairman, Ladies, and Gentlemen.

In selecting this subject of retro-displacements of the uterus, I do so for three reasons:

First.—On account of its frequency.

Second.—The difficulties we all meet in handling it.

Third. To draw out a discussion on the treatment that may be of some value.

I do not purpose to enter into an exhaustive discussion of this subject, only so far as to bring out the more practical points. Every practitioner, whether general or special, meets with this condition. Of all forms of displacements of the uterus, that of retro-displacement is the most common; it is met most often in child-bearing women, next in sterile married women, and least frequently in single women. The causes that produce it are many, yet a few commoner ones which I will mention are responsible for the greater number of cases.

First.—Following labor or miscarriage due to subinvolution of the uterus, which of itself is likely to be due to a lacerated cervix.

Second.—Lacerated perineum, thus undermining the support of the uterus, and allowing the posterior vaginal wall to be carried forward, dragging the uterus with it.

Third.—Various growths from within.

Fourth.—Falls, and inflammatory conditions in the broad or sacro-uterine ligaments.

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The diagnosis is easily made by digital examination, and it should be the exception, and not the rule, that any other means are resorted to. The effects of these deformities are obstructed circulation and hyperplasia, lack of nutrition, constipation, and predisposition to inflammatory conditions of the pelvic organs. The symptoms are irregular and posssibly painful menstrual flow, bearing down, pain in the back, headache, gastric disturbances in the form of dyspepsia, cystitis, hemorrhoids, and various nervous disorders. In taking up the treatment, I will mention the various means and methods that have been and are now being used to correct this deformity. Knowing the causes of these displacements, it is but rational to say, remove them. After labor or miscarriage the patient should be examined before being allowed to leave her bed, and if laceration of the cervix or perineum be found it should be repaired; if for any reason it cannot now be done, some form of artificial support should be used until such time as it can be.

Subinvolution will invariably follow lacerated cervix, and, with the enlargement and extra weight that follows, it is only a question of time when it must come down. The precautionary methods I urge would prevent many of these cases. Unfortunately those who deal mostly with them do not see them until after the deformity has taken place; in this case we must correct the displacement. Some cases can be readily restored to position by making pressure against the cervix and carrying it backward, thus throwing the fundus forward into position; or by placing the patient in the knee-chest position, opening the vagina and allowing the air to enter, thus distending its walls and carrying the uterus into position. If it does not, while the patient is in this position, some pressure may be made back of the cervix, and for this purpose I use an ordinary male sound. The uncomplicated cases can be restored by one of these methods with perfect safety. If they cannot be, you may conclude that you have a resistance to overcome in the form of bands of adhesions, or possibly

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lateral inflammation with one or more diseased tubes or ovaries. The old and common practice of introducing a sound for the purpose of restoring the organ should be severely condemned.

It has probably caused more trouble than the fondest hope of its inventor ever dreamed of its doing good. Used as it has been by almost every practitioner with no regard for cleanliness, and with no discretion upon what class of cases it is used, the effect could not be otherwise than serious. The mere effort to lift an adherent organ is a dangerous one, and ought not to be undertaken except with every precaution and by experienced hands. Once it has been restored, providing there are no adhesions, it can readily be held in position by a properly fitting and well selected pessary, providing, of course, the perineum is sufficiently intact to hold the pessary. The selection of a proper pessary for each individual case requires a mechanical ingenuity that some can never acquire by either age or experience. A miss-fitting pessary is likely to set up a local peritonitis that may involve tubes and ovaries, making a trouble far more serious than the original one. Hence the necessity of thorough familiarity with their use and application. Comparatively few women are content to wear a support constantly, though it may do its work perfectly. In this case one can only restore the tissues, and this, properly done, before adhesions have taken place or after they have been broken up (if possible to do this), will usually hold the organ in position. Thomas Addis Emmet claims he can restore any case of this kind by his operations—I say operations, for both cervix and perineum may need to be repaired. No man lives whose work can be taken for more in this class of work than Emmet's. It is to be regretted, however, that what Emmet can do can be done but by few. Strange as it may seem, there are men all over the country doing plastic surgery who would shudder to undertake some simple minor work, and are apparently perfectly satisfied with their results. Could they see it properly done, I question whether they would

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acknowledge having done it at all. Personally, I find no other surgical work requiring more skill and precision, in order to accomplish results, than this. The mere fact of closing up a gap means nothing (unless a possible trouble,) but to restore the parts to their normal condition means a great deal more than the average man appreciates. Those, then, who are not possessed of Emmet's skill will have to resort to other operations, or possibly combine his with others. Alexander's operation of shortening the round ligaments has many warm supporters in those who have done it most. Others condemn it because it is not permanent.

It is applicable only in those cases where the uterus is freely movable; while apparently simple, it is sometimes difficult to find the ligaments, and is not done without danger. If adhesions exist which cannot be broken up, the abdomen must be opened. In these cases with adhesions, we get the retroflexions, as a rule. Once in the abdomen we can relieve the adhesions; and if the tubes and ovaries are found to be diseased and have to be removed, tying them off by Dr. Joseph Price's method will restore and hold the organs in position. If the tubes and ovaries are intact, ventral fixation may be done. This, too, has many warm and hearty supporters, and equally as many who condemn it on the same ground as Alexander's operation. Again, many modifications and combinations of Alexander's operation have been done. Mann, of Buffalo, loops the round ligaments upon themselves; others combine the internal with the external method. In my opinion, any and all of the operations, and in many cases a combination of them, are justifiable, depending, of course, upon the individual case. But before closing I would like to emphasize the importance of the precautionary measures, and by so doing many a deformity may be prevented, the patient relieved of much trouble and suffering, and the gynecologist robbed of many a glistening coin.

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DISCUSSION OF DR. McLAREN'S PAPER.

DR. H. W. LONGYEAR. I have listened with a good deal of pleasure to the doctor's paper, and I am glad he called attention to the necessity for accuracy in these plastic operations for the repair of the pelvic floor to assist in replacing the uterus. There is certainly nothing, to my mind, of more importance than care and precision in these operations. As he says, it is not simply closing the gap, but we must restore these parts to the position in which they were previously. We must consider, when we do that, that the muscles have retracted; they are not simply separated, but the ends are constantly retracting toward their origin, farther and farther from the margin of the cicatrix. The consequence is if you go in and make a superficial denudation to repair the perineum or the pelvic floor, you do not take up the divided *ends* of the levator ani, transversus perinei, and so on. You cannot do that by a *superficial* denudation, and that is the reason why I favor the Tait incision in the split flap operation, rather than the ordinary method of denudation which you make in Emmet's operation and others, where you simply cut out a pattern of mucous membrane, then sew it up according to that pattern; and if your rupture has gone up on one side only, which is often the case, you sew up a part only of the perineum. You are puckering up the muscles on one side; you should seek to put the torn ends of the muscles together. In the flap-splitting operation, you dissect up under the vaginal mucous membrane, and sew the parts up with the buried suture that have been torn away, and restore them to their original position. You sew it from the depth of your dissection down to the perineum proper, and then bring it together en masse, from side to side. This is the particular

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object of the buried suture in this operation, as by its use you can restore each part separately to its original condition.

The doctor spoke about repairing the cervix, as I understood him, before the patient left her bed. I would like to ask him if he meant by that, that he would repair it in ten days or two weeks after rupture. I know that has been advocated by some; scraping the parts with a curette, and then sewing the lacerated portions together. It seems to me we cannot get good results while the uterus is still discharging lochia, as the parts must then be in a very soft, spongy condition, not very well suited for operation. I have seen operations of that kind made three or four weeks after confinement, with rather bad results, on the perineum as well as the cervix. I think if you can sew it up immediately it is all right. If you cannot, you had better wait three months or more, until the parts have involuted sufficiently to make the tissues firm.

There is one operation that the doctor did not touch upon for the relief of retro-displacement of the uterus, and that is the Mackenrodt operation, taking the place of the operation of shortening the round ligaments. It is one I have performed to a limited extent only, but so far it has been quite satisfactory. Sufficient time, however, has not elapsed to speak decisively of the results, and yet the reports that have come from Germany, especially from Martin, are very good. The operation consists in dividing the mucous membrane of the vagina anterior to the uterus, longitudinally with the vagina, from about half an inch back of the meatus urinarius to the cervix, then separating the uterus from the bladder, dissecting up the peritoneal covering of the uterus with the fingers as far as possible, and sewing the vaginal mucous membrane to the uterus above the internal os, shoving the mucous membrane up between the bladder and uterus, and sewing it to the uterus. In this way you make an attachment which prevents the uterus from falling backward. It is a rational method of treatment, and one which can be performed without going into the peritoneal cavity at all. It is much easier

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of performance as a rule than the shortening of the round ligaments.

DR. MINAR. I would like to ask Dr. Longyear if the operation he speaks of is adapted to both retroflexion and retro version of the uterus alike.

DR. LONGYEAR. It certainly would be. You must get up high enough to make traction above the inner os, of course. The operation is only applicable to cases in which reposition can be made easily, which is just as the reader of the paper said in regard to adhesions; if you cannot replace the uterus without force, then this operation is not indicated; and for the same reason the operation of shortening the round ligaments is not indicated. If you can replace the uterus easily, then this operation is indicated.

DR. HUGH MCCOLL, Lapeer. The importance of this question is apparent to us all, and the difficulty of retaining the uterus in position is something that we all have to contend with. I can endorse what Dr. Longyear has said with regard to the operation in the repair of the perineum. I do the operation now in the same way that he does by using the buried suture after the flap-splitting operation, in order to get the parts in contact which have been torn apart. There is no difficulty in doing the operation. There are some operators in this country who carry the Mackenrodt operation to a greater extent than the author himself, or Martin, of Berlin. Werder, of Pittsburgh, advocates putting sutures at the fundus of the uterus, carrying the uterus forward by placing the sutures high up, just as those in ventral fixation place the sutures behind the uterus itself to keep it forward, in order that the pressure of the bowels should come in constantly behind, or upon the posterior surface of the uterus itself. It is claimed that in a good many of these cases where the suture is merely placed immediately above the cervix we get retroflexion again. With the suture carried higher up it is almost alway necessary to open the peritoneal cavity between

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the bladder and the uterus, in order to pull the fundus of the uterus forward and attach it to the vagina.

DR. COLLINS H. JOHNSTON, Grand Rapids. There are two or three points in Dr. McLaren's paper that interested me very much, and one was the Alexander operation. It has been represented on a great many sides as a perfectly safe procedure, but nevertheless every now and then we have heard of deaths following it. A case came under my observation quite recently upon which Alexander's operation had been performed about two years ago for retroversion, without relief. A few months ago I opened the abdomen to do a ventral fixation, and at that time we found a most interesting condition. The patient had never had an attack of peritonitis either before, or at the time of, her first operation, and yet I have never seen a pelvis so full of peritoneal exudate and adhesions as in this particular case. The appendages were prolapsed backwards and completely enveloped in adhesions, so that on one side it was impossible to find the tube or ovary. Masses of adhesions surrounded both ovaries and tubes. The uterus was also covered with a dense mass of adhesions, fixing it back in connection with the rectum; and that these adhesions followed Alexander's operation is proved by the fact that they ran forward and downward to the internal inguinal rings. On one side the round ligament had stretched, allowing the uterus to tumble back and around to the other side, and on this side the adhesions were much more dense than on the opposite side. So that I have been led to believe that, without our realizing it at the time of the operation, a great deal more damage may take place in the abdominal and plevic cavities, as a result of this operation, than we have any idea of. I do not believe many of these cases of Alexander's operation have required opening the abdomen later. So that it seems to me this case was one of considerable importance. I am very fond of the operation myself, and have followed my cases for three or four years after having done it. One woman has gone through two pregnancies and

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her uterus is in as good position to-day as it was when she left the table. In spite of the ease of doing it, and of the certainty of finding the round ligaments, it seems to me there are dangers connected with it that we cannot overlook.

As regards the Tait versus the Hegar or Emmet operation; in looking at a case of retroversion we are very apt to consider the operation more than the patient. An uncomplicated retroversion, as far as my limited observation goes, needs no treatment of any kind. If it produces no symptoms, I would not even introduce a pessary. When we have a case of retroversion that needs an operation, it never exists without a rectocele or cystocele. Tait himself, and the great apostle of his operation in this country—Munde—do not claim that Tait's operation will permanently cure rectocele. That is almost the only condition for which I find it necessary to do a perineal operation. An uncomplicated rupture of the perineum does not amount to anything. I do not find anything in connection with the perineal operation that cannot be done with either the Emmet or the Hegar operation. Emmet does the operation to suit the case. The laceration is almost never central, and I do not see why by the Hegar or Emmet operation we cannot restore the parts to a more normal condition than we can by the Tait operation.

With regard to the Mackenrodt operation, I saw Martin, of Berlin, do it a great many times. I think he had done it about eighty times when I saw him. In a private conversation with him, I asked whether he did it on his private patients, and whether he would advise me to try it when I returned home. He said he would not. I said, "Why do you do it?" He replied, "My assistant has gotten the operation up, and somebody must try it. I have a great many patients upon whom I have tried the operation, but I have formed no opinion as to the amount of good it does." Sanger has also done it many times, as well as many other Germans, but I did not hear a single man say, in private conversation, that he could honestly recommend the Mackenrodt operation.

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The peritoneum is always opened in doing it, and peritonitis and cellulitis are not infrequent sequels. The Germans are not performing this operation now as much as they did, and I do not believe Mackenrodt himself will be doing it so frequently in the course of another couple of years.

DR. LONGYEAR. One word in regard to the Tait operation. Dr. Johnston said that it was not possible to cure a case of rectocele with it. I admit that is so if we simply make three or five incisions, as recommended by Tait. But we must go further than that. We must dissect up under and follow the direction of the tear, sewing it up with the buried suture. Tait does not direct that, and I never saw him do it. He makes three or four incisions, and then sews them up, without further dissection. I would go further, and dissect up, and then close with buried suture. By this method you can relieve the cystocele perfectly because you can bring together the divided ends of all the perineal muscles which have been torn, as well as the levator ani, if necessary, and by restoring these parts the opposing force thus formed will prevent the cystocele.

DR. JOHNSTON. I think we should call that the Tait-Longyear operation. My remarks were confined to the Tait operation.

DR. LONGYEAR. I simply speak of dissecting up after making the Tait incision.

DR. MCCOLL. I think most of Tait's pupils have adopted the course which Dr. Longyear pursues. They do not strictly follow their leader in this particular.

DR. J. G. LYNDS, Ann Arbor. In regard to doing an operation on the cervix a short time after labor and before the patient leaves her bed, I will say that during the last three or four years I have adopted that plan a good many times, and I have never seen any trouble come from it. In one or two instances I did it really to prevent trouble. One patient had

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a rather bad discharge. Three weeks after operation she had a chill, and the next morning I examined her and found a very badly lacerated uterus extending up into the broad ligament on one side. I immediately curetted the uterus, washed it out, closed the sides of the uterus with some stitches, and the patient had no further trouble. Her temperature came down to normal. In a number of other cases I have done likewise, cleaning out the uterus thoroughly first. There is always some broken down tissue in the uterine cavity a short time after labor, and by cleaning this away, curetting the granulations, and putting in some catgut stitches, union readily occurs, and it restores the parts more perfectly than can be done by an operation later on, in which you remove a large amount of cicatricial tissue.

DR. MCLAREN. I will answer Dr. Longyear's question by saying that I have not carried out the early operation on the cervix, nor did I intend to leave the impression that I advised operating before the patient was out of bed. We should carefully examine the patient before she gets up to see whether she has a laceration of the cervix or not, and if she has we should not let her get out of bed and go around without any support or protection to the uterus. We should support the uterus and keep the patient quiet for several weeks, or until such time as we can get around and do the operation.

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THE SURGICAL TREATMENT OF EXTRA-UTERINE PREGNANCY.

J. G. LYNDS, M. D.
Ann Arbor.

The object of this paper is to open for discussion some points regarding the treatment of extra-uterine pregnancy; and the better and more briefly to bring them before you, I will reduce them largely to propositions.

I. THE ONLY TREATMENT THAT SHOULD BE RECOGNIZED IS SURGICAL TREATMENT.

I am quite sure that all the surgeons present will agree with me on this, my first proposition, because they are convinced it is right and at the same time takes nothing from surgery. But how about the therapeutist who cures these cases by injecting poisons, or kills and absorbs the fœtus and fœtal structures by the use of the electric current? If there are any such present, I trust we shall hear from them in due season. Now, here I will sandwich in my second proposition, which will help me to prove my first.

II. THE DIAGNOSIS, ESPECIALLY IN THE EARLY STAGES, IS ALWAYS DOUBTFUL, AND IN MANY CASES THE CONDITION CANNOT BE DIFFERENTIATED FROM A COLLECTION OF PUS, OR OTHER TUMOR.

The ordinary symptoms, absence of one or more periods, breast symptoms, nausea, return of periods, severe pain, followed by signs of internal hemorrhage, etc., may one or all of them be absent up to the time of fatal hemorrhage, or for

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an indefinite period. Then, with a pus tube or other enlargement, you may find one or all of these symptoms present. Now, the application of an electric current, or the injection of a poison into a pus tube, is known to be exceedingly dangerous, because either may cause rupture of an already distended tube, or force some septic matter through the abdominal ostium, thereby causing a fatal peritonitis.

The danger of rupturing the sack is even greater in extra-uterine pregnancy than in pus tube. The dangers to the mother seem indeed great, but, should these measures succeed in killing the child and not the mother, still the patient need an operations, and in the vast majority of cases sooner or later has to have one. Therefore, I say that either the injection of poisons, or the application of the electric current, is both useless and dangerous, and should be entirely abandoned.

III. ALL EXTRA-UTERINE PREGNANCES ARE PRIMARILY TUBAL.

This proposition, if proven, has a very important bearing on the treatment. There is a form of uterine pregnancy, it must be remembered however, which closely resembles the tubal, and needs to be treated likewise. I refer to pregnancy in a rudimentary cornu of a bi-horned, or what is usually called double uterus, and which is often, no doubt, as shown by Kussmaul, mistaken for extra-uterine. It seems to be this condition which is most likely to go to full term without marked symptoms, and be followed by spurious labor.

It would seem as though the uterine wall would, in such cases, when removed be easily recognized, but the contrary is the rule, and, as Virchow has pointed out, the only reliable points in diagnosis are the following:

First.—In a normal uterus the round ligament springs from the upper angle, immediately in front of the tube.

Second.—In tubal gestation the round ligament is attached

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to the body of the uterus on the uterine side of the gestation sack.

Third.—In cornual pregnancy the round ligament is situated on the outer side of the gestation sack, and but one round ligament and tube enters the unimpregnated part of the uterus.

We have every reason to believe that the old classification of ectopic pregnances into tubal, ovarian, and abdominal, is an erroneous one, considered from the standpoint that impregnation and growth of the ovum occurs in either the ovary or the abdominal cavity.

That the fœtus may continue to develop after its expulsion from a tube, either by rupture of the tube, or expulsion through the abdominal opening, which is known as tubal abortion, there can be no doubt; and there is certainly no question about the ovary frequently forming a part of the sack wall; but that it ever entirely forms it is without any reliable proof, and the more such specimens are carefully studied the more proof accumulates in favor of the above proposition. Many of the specimens presented as examples of ovarian and abdominal pregnancies have recently been studied by Sutton, and other reliable men, and they report alike in favor of all having been tubal, primarily, or the form of uterine I have referred to. A specimen I will present to you has every appearance at first sight of being ovarian. The ovary of the side to which it was attached has entirely disappeared, and so far as one can ascertain by examining the sack, there is no trace of tube in it. Here, however, I have the uterus also, which persistent bleeding necessitated the removal of, and in the stump which was ligated within a half-inch of the uterus the tube is plainly seen. Here the tube, ovary, and other structures went to form the sack, but where one leaves off and another begins who can tell? Had the uterus here not been removed, the case would have every appearance of an ovarian variety.

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IV. ALL CASES WITH THE LOCAL SYMPTOMS PRESENT SHOULD BE OPERATED UPON WITHOUT UNNECESSARY DELAY.

The life of a woman suffering from a pregnancy outside of the uterus is always in great danger. The life of the child need not be taken into serious consideration even though it be near full term. The delivery of a live extra-uterine child at term may be a triumph of surgery, but when you take into consideration the fact that they are always of very low vitality and poorly developed, and that they very seldom live to maturity, it becomes a question whether a live one is more of a triumph than a dead one. I can find only one case in which the child is reported to have lived to become an adult, and that is one of Lawson Tait's cases in which, although the mother died four days after operation, the child lived to become "an elegant woman." All other cases that I have seen reports of have died before they were a year old. There certainly can be no great advantage in delivering a child that requires the tenderest of care and with that lives only a few months. If it were only possible to operate before rupture of the tube in all cases, when the operation does not differ from removal of the tube for other diseased conditions, the operation would be comparatively simple. Unfortunately this is seldom done because seldom diagnosed, or when diagnosed it is difficult to convince a patient or her friends that so serious a condition exists. I have diagnosed the condition once and the patient, though very reluctant to consent to an operation, finally did so, and was operated upon easily and successfully.

Many cases demand immediate operation at the time of rupture because of continued hemorrhage. Here, with the necessary delay of getting the surgeon, of getting the patient in condition for operation, with the unfavorable conditions under which the operation is likely to be performed, one must expect a large number of fatal cases. Many such cases die and are buried, no doubt, without the attending physicians recognizing the cause, or, if recognized, they die before the neces-

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sary aid can be had. To illustrate the danger of delay after a probable diagnosis is made, I will relate a single case that came to my notice while in New York recently. I was invited to witness an operation for suspected tubal pregnancy at one of the hospitals the following morning. On arriving there at the appointed hour I learned the patient was dead. A post-mortem revealed the abdomen full of blood, and a fœtus among the intestines, there being a ragged tear in the sack. Here was a case in a hospital, under the immediate care of competent physicians, already prepared for operation, and yet she died from rupture and hemorrhage. This was, I believe, a secondary rupture, the tube having ruptured between the folds of the broad ligament sometime previously. The patient's life was sacrificed by delay, and hundreds of similar cases could be cited were it necessary. In a few cases where the fœtus dies at the time of primary rupture, and the amount of hemorrhage is not great, the placenta ceases to develop, absorption of the blood clots, fœtus, and placenta is partial, never complete I believe, and the patient has no further development or rupture. But are these cases well? Perhaps there is an occasional one comparatively so; but the great majority of them are invalids while such a condition exists, in more or less pain constantly, in danger of suppuration, and sooner or later come to their death or an operation from the existing conditions. But a short time ago such a case of several years standing came to the University clinic and insisted on having an operation, claiming her condition had been a cause of invalidism all the time, and she wanted the chance of an operation to relieve her of her burden; and was willing to risk the dangers attending it with the hope of being relieved. She was successfully operated upon and greatly pleased with the relief it afforded her. One other case which I operated on at Toledo a few months ago will illustrate other dangers of delay. The history indicates that three other ruptures had already taken place, and a fourth was impending. The history of the case is this. A few

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weeks after the symptoms of pregnancy appeared there was pain in her right side, and slight indications of hemorrhage. She was soon up and around again, and if I remember correctly did not have a physician during this attack. About six weeks later she had a more severe attack and marked symptoms of internal hemorrhage. She slowly recovered, but had a distinct enlargement in her right side. This seemed to become smaller for a few weeks, when she had a third attack, and the doctor who attended her despaired of her life for several days, she being pulseless at the wrist many times. She finally rallied, however, and kept improving for a time, when she began having more pain, an elevation of temperature, and the enlargement, which now extended above the umbilicus and pretty well over to the left side, became more tense and painful. At this stage I was called, and besides the above condition, found fluctuation through the bowel. I advised an operation as the only chance, although her pulse was then 130, and general condition corresponding. The patient and her husband, realizing the dangerous condition she was in, were anxious for the chance an operation afforded.

I made the ordinary median incision, and found, as I expected, strong adhesions between the sack and the anterior wall. Opening through the sack, I removed as much as three or four quarts of putrid blood. I emptied this sack as rapidly and completely as possible, there being some hemorrhage, but found no fœtus, nor anything to account for the blood. Passing my hand down to the bottom of the sack, I found a small opening through which I could scarcely introduce my finger. Enlarging this, I could introduce my hand into a second sack of considerable size, and in this I found fœtus, blood clots, and placenta. The fœtus corresponded to one of about two and one-half or three months. It was about five months since the beginning of symptoms of pregnancy. So the fœtus had probably been dead since the second rupture, or about two months. The placenta had evidently kept on growing,

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for it was as large as a small one at full term when developed in the uterus. Being situated down in a second sack as it was, and suppuration already begun, it seemed that its removal would give the patient the best possible chance. I consequently separated and removed it as rapidly and thoroughly as possible, packed the cavity sufficiently to control the hemorrhage, which was very profuse, and drained through both the incision and the vagina. The patient lost some blood, a large amount for a patient in her condition, and, as one would expect, suffered considerable shock. She soon rallied, however, and made a rapid and complete recovery. Both drainage openings closed up completely, and the last I heard of her she reported herself as well and doing her usual work. Here is a case that demonstrates the danger of hemorrhage, even after the death of the fœtus; and also the danger of suppuration occurring. Imagine suppuration under such conditions! What chance could a patient have to escape with her life? With such a probable future in store for these cases, I think operation advisable without unnecessary delay. Coming, as most of these cases do, under the care of the general practitioner, it is of the greatest importance that they realize the danger of sudden rupture, when no means at hand will stop the terrible hemorrhage, and also that the longer such cases progress, the more severe and more dangerous the operation when it is done.

V. WITH BUT FEW EXCEPTIONS, OPERATION SHOULD BE MADE THROUGH THE ABDOMEN.

The exceptions are, I should say,

First.—When suppuration has taken place and there is pointing in the vagina.

Second.—When an opening has formed externally or in some of the passages.

Third.—When the pregnancy is of the interstitial variety, or partially so, when it may be not only feasible but far easier and safer to empty through the uterus.

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Two cases which have within the last year come under my care will illustrate this. Mrs. D. came to me in December last. She was very thin and anæmic, and very weak. Her periods were profuse and for the last four months she had been flowing continuously. There were no symptoms of pregnancy. Local examination revealed the uterus retroverted to the second degree and slightly enlarged, with a mass larger than the uterus closely attached to its right cornu. I explored the uterus and it was empty. The patient had considerable pain, but thorough examination was not possible without anæsthesia on account of the tenderness, and anæsthesia was not advisable on account of her general condition. Ten days after I first saw her, before I had fully decided the nature of the trouble, she was seized with severe pains of the character of labor pains, and a fœtus about two and one-half months advanced was expelled, together with the membranes. The shape of the sack was a long oval mass and not that of the uterus. An interstitial pregnancy had been thrown off through the uterus. Mrs. S. entered the hospital in June last, mother of five children, youngest twenty months. Had one abortion a year ago. She is very positive that both fœtus and membranes came away. No symptoms of pregnancy since. Periods irregular and profuse, several times amounting to flooding during the past year. Has dragging and soreness in the pelvis, especially on the right side; uterus large and flabby, and enlargement in right side. On account of the enlargement of the uterus, hemorrhages, and the softened and thickened condition of the endometrium, it was decided to curette. I found considerable fungous tissue, which I curetted out very thoroughly, and washed out the uterus. Desiring to curette more in the region of the right tube, and to drain what seemed to be a pus tube if possible, I again used the curette, and after using it a little I struck a hard substance, and after catching it in the curette and removing it, found it to be the bones of a small foot; this

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was followed by another, then the spinal column, and finally the head. The bones were well ossified, though small.

My curette now passed easily four inches through the uterus, and I was fearful of having entered the peritoneal cavity. The patient had no symptoms of peritonitis however, and made a rapid recovery. It is a conceded fact that the interstitial variety is the most dangerous of all, if it ruptures into the peritoneal cavity, most surely causing death if not immediately operated on; and an operation may mean hysterectomy as the only means of controlling the hemorrhage. The diagnosis in this condition is always doubtful, but a careful exploration of the uterus, and curetting or passing of an exploring needle into the enlargement, should not do harm, and may do great good. Even though abdominal section needs to be done, it is well to have the uterus cleaned out first.

VI. REMOVAL OF THE ENTIRE SACK AND CONTENTS IS ADVISABLE WHEN POSSIBLE WITHOUT SERIOUS DANGER TO IMPORTANT STRUCTURES.

This is usually possible when the gestation has not advanced beyond the fourth month. We take it for granted that the tube has ruptured sometime before this. If it has ruptured into the peritoneal cavity, the blood clots are washed out, and the tube and ovary, together with the gestation sack, are removed by ligating close to the uterus as in salpingectomy. If it has ruptured between the folds of the broad ligament, by transfixing the broad ligament below the sack, and tying off in sections close to the uterus, the tube, ovary and sack, with contained placenta and fœtus, may be cut away, and the cavity in this way be completely obliterated. Or it may be possible, when the sack cannot be got around in this way, to enucleate it, so long as adhesions to the intestines are not sufficient to prevent their being separated. This may be possible at any stage, even at full term. The specimen I have to show you will demonstrate this, it being one in which

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it was done, and, as you will see, the child is fully developed. In this particular case there were adhesions to everything in the lower part of the abdomen. The colon, omentum, small intestines, rectum, and the uterus were all closely adherent, and an enlarged ureter ran close to the sack. The placenta is situated at the posterior and upper part of the sack, where it was adherent to the omentum and intestines; and with the sack open in such a case, I doubt if many would attempt its removal. It is one of a very few cases where the sack and contents were entirely and successfully enucleated, and like *all* the preceding cases the true nature of the enlargement was not discovered until after removal. I wish to call your attention to the convalescence of this case. She had no bad symptoms following the operation, and in four weeks returned home, as she expressed it—"As well as ever I was." Compare the convalescence of this patient with one where the sack is stitched to the abdominal walls and the placenta left in situ, where there is a sinus and disagreeable discharge, usually for months, frequently for the remainder of the patient's life, which is likely to be materially shortened by septic absorption or other complications arising from the condition, and you will see the advantages of complete removal when possible. I fully realize that in many cases it would be reckless to attempt enucleation, but its advantages are certainly great where it can be done without greatly increasing the dangers to the patient. When enucleation is not possible, the best plan of treatment seems to be to stitch the wall of the gestation sack to the abdominal incision, and keep the cavity well drained and well washed out. Some of these cases completely recover, the sack gradually contracting down, the placenta coming away piecemeal, until finally the cavity becomes entirely obliterated. Others continue to discharge, and the cavity perhaps grows smaller, but never closes entirely, or if so, after a long, tedious process.

When the child has been dead for some time, the placenta may be removed without great danger of hemorrhage. This

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is not always the case, however, as the placental circulation may remain active for a considerable time after the death of the child, as in the case I have spoken of, where the fœtus had been dead some weeks, and yet the hemorrhage was very profuse. If its separation is attempted, or if during the manipulations it is partly separated, it must be completed, and if hemorrhage occurs, trust to hæmostatic agents such as packing, iron preparations, and the cautery to control it when ligature cannot be used.

The cavity should be well drained, as infection from the intestine, where the peritoneum is stripped off, is most likely to occur and cause a septic discharge which lasts until the sack contracts down and obliterates the cavity; an indefinite time. It has been recommended to tie and remove the cord close to the placenta, strip off the amnion, cleanse the cavity thoroughly, and hermetically close it. I have been unable to find more than a couple of cases so treated, where it has not been necessary to open up later. This plan seems to be seldom adopted.

I will now present to you the full term specimen I have referred to, which was removed by enucleation. If any of you care to examine it, I will be pleased to have you do so. Such specimens at the present time are very rare, so much so that a case that was operated on in Detroit not a great while ago, was reported in the secular press as the "only one of the kind." The most of such cases are diagnosed early and operated on, as all cases should be, or the patient dies before the development reaches this stage. This case was operated upon last December in the University clinic, by Dr. Martin, myself, and Dr. Foley.

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ECTOPIC PREGNANCY.

HUGH McCOLL, M. D.
Lapeer.

For all practical purposes, all cases of ectopic pregnancy may be considered as primarily tubal. Other forms of ectopic pregnancy may possibly exist as primary conditions, but if so they are very rare. Interstitial pregnancy, including as it does a portion of the tube, is classed as tubal. Tubal pregnancy usually continues as such from six to thirteen weeks, when by distention rupture takes place in one of two directions, into the peritoneal cavity, forming intraperitoneal hematocele, or between the folds of the broad ligaments, forming extraperitoneal hæmatocele. In either case the placenta may take on new attachments, and the fœtus may continue to develop and grow to full term, or till placental separation causes another hemorrhage.

Till recently not many cases of ectopic pregnancy were diagnosed as such till rupture had taken place, and even now the condition is not recognized as often as it ought to be, till rupture of the tube with its accompanying shock is encountered. Many cases do not come under the observation of the physician in the early stages, and sometimes when they do the symptoms presented are not always such as to enable even expert diagnosticians to make a correct diagnosis of the case. I have seen but two cases of unruptured tubal pregnancies operated upon, and in neither case was a diagnosis of pregnancy made until the abdomen was opened. In many cases, however, a careful study of the history and symptoms will enable the physician to make a correct diagnosis. It is

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essential that the physician should make a correct diagnosis when rupture takes place, for then the life of the patient depends upon the course of treatment followed. All cases of tubal pregnancy, where the diagnosis has been made before rupture, should be operated on at once. If there is uncertainty as to whether pregnancy exists, or some other tubal disease, the operation should be made.

When rupture into the peritoneal cavity takes place, the operation should be done as soon as the patient recovers from the immediate shock.

When rupture takes place between the folds of the broad ligaments, forming an extraperitoneal hæmatocele, the urgency for operation is less, and in most of the cases no operative interference is necessary primarily, and in but a small number secondarily as a result of suppuration or recurrent hemorrhage. I know that a number of expert and able operators advocate operation in every case, claiming that many cases diagnosed as extraperitoneal are intraperitoneal. In this connection I report briefly the histories of four cases recently encountered. The first two were cases of extraperitoneal rupture.

Mrs. B., aged 40. Mother of five children. Youngest five years old. Had missed one menstrual period, and was approaching the time for the second when she had an attack of uterine pain followed by a gush of biood; pain ceased. Two days later, while standing on a chair fixing a window curtain, had another attack with several gushes of blood from the vagina, which occurred at intervals for three days, then ceased. Two days later was seized while in bed with intense pain in the pelvis on the left side, and became very faint. I saw her a few hours later, and found a large mass filling the pelvis on left side, but circumscribed, uterus pushed to the right side, and cervix under the arch of the pubis. She complained of rectal smarting and tenesmus. Upon introducing my finger into the rectum, a constriction was encountered through which my finger passed with difficulty, the blood evidently dissecting

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up the peritoneum and pressing on the rectum, as described by Tait so graphically. I did not consider operative interference necessary. She made a complete recovery, and in three months was as well as before.

Case II. Mrs. H., aged 22. Married one year. Had a history of gonorrhœa shortly after marriage. Missed two menstrual periods. Considered herself pregnant. At tenth week had bloody discharge from vagina, recurring every two or three days, sometimes with pain. Noticed a few shreds of membrane. One week after first discharge, was seized with intense pain and shock. Her doctor was called and thought that she was having an abortion. The pelvis was filled with a globular smooth mass. The uterus was pushed up so high that it was with difficulty the cervix could be reached behind the pubic arch. The conditions were such that he thought best to call a consultant, which he did next day, but the consultant was certain that it was not a case of abortion, and, as neither of them had in a very long experience met with such a case, I was sent for. I found the pelvis full. The cervix could be reached with difficulty. A smooth surface rounded up above the pubis almost lik a large soft fibroid. No evidence of hemorrhage into the peritoneal cavity. On rectal examination the same condition existing of constriction. The pain in this case was referred to the right side. Here then was a case of pelvic hæmatocele, lifting up the peritoneum from the whole pelvic floor, forming a dome above. She had rallied well from the shock, and as there was no urgency for operative interference, I had her watched carefully. She had no increase of temperature, and ultimately made a complete recovery. There was for a year a small lump on the right side, but that has entirely disappeared. This was the largest case of extraperitoneal hæmatocele that I have ever seen. I have seen many other cases of much smaller and more limited hæmatocele, some of which have passed on to suppuration, which I have opened into the vagina. I have seen two cases of extraperitoneal hæmatocele

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of pregnancy operated upon, one by abdominal section opening the pelvic peritoneum, after stitching to the parietal peritoneum, turning out the blood clots and drainage; the other by vaginal incision, and packing with iodoform gauze; but the recovery in these cases to ultimate health was not more rapid than those not operated on.

Case III. Mrs. M., aged twenty-five. Married five years. Had not been pregnant, and considered herself very well since her marriage. Six weeks before I saw her she had missed her menstrual period, and for a few days was more or less nauseated; but that passed off, and she was in her usual healthy condition. At the time of her next period, she had a slight show for one day. No pain nor discomfort of any kind. Two weeks later she experienced intense pain and shock. A physician was called in, who administered stimulants and morphine. I saw her the next day, and, as her doctor suspected, I found intraperitoneal rupture of an ectopic pregnancy. She had rallied fairly well, and willingly submitted to the operation. A large amount of blood was found in the pelvis, and the membranes hanging in a rent in the left tube. I did not find the fœtus in this case. She made an uneventful recovery.

Case IV. Mrs. O. L., about thirty-five years of age. Mother of three children, youngest four years. A slight endometritis since the birth of last child. Menses regular till three months ago, when they ceased, and for eight weeks had the usual signs of pregnancy. At that time was taken with a severe pain of a cutting or griping character, with faintness, but was relieved by a few doses or morphine. She noticed a marked increase in the size of the abdomen shortly after. For the next four weeks history not clearly ascertained, but at that time was taken with severe pain and intense shock. Her physician being sick, Dr. E. D. Gardner was called in to take charge of the case. The next day I saw her, and found her with abdomen as large as a woman at seventh month of pregnancy; the pelvis was filled with a boggy mass. As she

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was still suffering intensely from shock and was almost pulseless, operation was deferred till next day, when, she having rallied somewhat, I operated. I found the abdomen filled with great blood clots, adherent to the coils of the intestines, and with difficulty separated from them. I found a fœtus of about three months among the clots in the pelvis, with a placenta almost separated, and incorporated with it and almost like a part of it, three layers of blood clot of different ages. I washed out the abdomen rapidly with sterilized water, and, as there was considerable oozing from the seat of the placenta, packed with iodoform gauze, after removing the left tube, which was ragged, and had been the original seat of pregnancy. It was evident that rupture had taken place four weeks previously, and that placental attachment had taken root in the pelvis, and was followed by subsequent separation. I was glad to get the patient alive off the table. She rallied slowly, but succumbed after twelve days to sepsis. This exemplifies the danger of delay in operating after the first intraperitoneal rupture.

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DISCUSSION OF THE PRECEDING PAPERS ON ECTOPIC PREGNANCY.

DR. H. W. LONGYEAR, Detroit. The specimen exhibited by Dr. Lynds is one of exceeding rarity, and of great interest as showing the possibility of removal of the sac. I consider the removal of the sac one of the most difficult procedures in surgery—that is, the sac of a full-time extra-uterine pregnancy—because it is composed principally of the two layers of the broad ligament, reaching well down into the pelvis and attached to the uterus. It is also adherent, usually, to the intestines or other organs. I have seen two such cases, and both of them were attended with great difficulty in this way. I believe the best method by which to treat these cases, as a rule, is to remove as much of the sac as you can, stitch it together, make an opening in the vagina and drain through it, and let the placenta come away through the vagina. Sew up the abdominal wound in the usual way without drainage if the fluid is not infected. If it is, then drain the abdominal cavity. I think these cases can be easily drained through the vagina and frequently washed out, because the sac lies close to the vagina on the side of its occurrence. As a rule, I believe that would be much the safest way to treat them. From the two cases that have come under my observation, I make that deduction. I think the doctor has been exceedingly fortunate in this case, and is to be congratulated on the success of the operation.

Dr. McColl makes a striking and very correct differentiation between the extraperitoneal and intraperitoneal hemorrhages, and I believe the point is a good one. Your extraperitoneal hemorrhage does not give you as dangerous a case to deal with as your intraperitoneal does. In extraperitoneal

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hemorrhage you have a restraining force that allows blood clots to form, and after your patient has rallied blood has ceased to flow. I think many of these cases will recover; I know they will; I have seen a number recover perfectly. But if the hemorrhage has been intraperitoneal, you feel no blood clot, no tumor; you have only symptoms to go by, and it is the most dangerous and most difficult form to diagnose. These are the cases in which the general practitioner makes his mistakes. He gives opiates for pain, uses hot appliances, poultices, etc., and keeps fooling with the woman until she is too far gone for the specialist to operate on. These are the dangerous cases. I had such a case come under my care a short time ago, where the woman had doubtless been bleeding a little for two months; part of the time up, part of the time in bed. She was treated with hypodermics, hot poultices, and things of this nature until she became tired of her doctor and sent for another one, who recognized the true condition and immediately sent for me. Getting her into the hospital with the least possible delay I operated on the woman, and found the abdomen full of blood. There must have been two or three quarts of blood in the abdomen—clots of all ages, and adherent to the intestines and omentum, some of them partly organized. The tube containing the bleeding placental mass was tied off within five minutes after the incision was made. She lived for several hours, but gradually sank, it being impossible to bring up the heart's action. It was not the loss of blood incident to the operation that caused her death, but the exhaustion incident to the loss of blood that had been going on for weeks. If the diagnose had been made early, the operation would have been simple, and there would have been no question about her recovery.

Dr. S. C. Graves, Grand Rapids. I rise to make one point in the discussion of this very interesting subject, and it is this, that the operative approach upon cases of what we might term intermediary plevic hæmatocele is a very danger-

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ous procedure. Cases, I care not whether they be intra or extraperitoneal, in which a sufficient time has elapsed for the thorough organization of these clots, and prior to the time when they have undergone suppuration, are dangerous ones to approach, as Dr. Longyear has said; and I desire to touch briefly upon this subject. I had a case where clots had formed from two distinct hemorrhages, and I approached it through the vagina, it being the intraperitoneal form of hæmatocele, and the clots last formed were easily washed away; but the result of the previous hemorrhage, in the shape of hard attached masses resembling scybala, it was absolutely impossible to remove. I realized then that the only hope for that woman was thorough and frequently repeated douching of the cavity with bichloride. But in spite of this she developed septicæmia and died. If we can get at these cases early, or even late, when the clots have broken into pus, they are relatively safe to approach. But these intermediary cases are very dangerous, and I think now, if I got another case like the one I have mentioned, after an aseptic puncture for diagnostic purposes, I would leave the patient alone, and await future developments.

Dr. Wm. T. Dodge, Big Rapids. I had a case of ectopic pregnancy last February, in which some points developed that have not so far been mentioned in the discussion. I was called to prepare to operate for appendicitis. I found the patient apparently suffering from general peritonitis. Her history was irregular menstruation and uterine disease, extending over a period of several years, and immediately preceding her attack she had not menstruated for six weeks. She had no other signs of pregnancy. She was taken suddenly with pain in the abdomen, and with symptoms of profound collapse. Her physician told me that in a period of one hour he injected one-third of a grain of strychnia hypodermically. She rallied from the shock, and two weeks subsequent to the attack I was called. A diagnosis had been made of appendicitis with rupture into the peritoneal cavity, on account of the tu-

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mor having been discovered in the right side. At the time I saw her, she had a temperature of 103, with a weak, rapid, thready pulse. I confess from the history, especially from the diagnosis that had been made by the physician who had seen her at the time of the original attack, that I did not suspect rupture of the tube; in fact, the degree of collapse she had at the time was not explained to me until some time after the operation. At any rate, she was apparently about to die unless she could be helped by surgical interference. I recommended opening the abdomen, which was agreed to, and it was found practically full of blood clots in various degrees of organization, and in the pelvis pus had already formed. The woman was in a bad condition, and I thought it unwise to indulge in free irrigations of the abdominal cavity, but scraped out what clots I could find with my hands, and satisfied myself with douching the abdomen with a few pitchers of hot saline solution. I introduced a large drainage tube, got the woman to bed, and she rallied slowly from the operation. The next morning her pulse being very much weaker than when I operated, I injected into the femoral artery a quart of hot normal saline solution, when her pulse came down to 90, and she progressed to recovery eventually, although she had considerable suppuration, and for a period of four or five weeks a large quantity of pus was discharged from the abdomen.

The lessons to be learned from this case, are: First. The advantage of trusting something to nature, and avoiding attempts to remove every particle of blood from the peritoneum. Had I attempted such a thing, the woman would have died on the table. Second. The value of transfusions of hot saline solutions (after hemorrhage or during shock) into the arterial system. This is done by passing a hypodermic needle into the femoral artery just below Pouparts ligament; when blood appears in the needle, the aspirating tube is attached, and the solution forced into the artery. In cases of shock the temperature of the solution should be 120° F. This method of

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transfusion was introduced by Dr. Robert H. M. Dawborn, of New York, and was described in the Medical Record, of January 2, 1892. The method has since been used in the radial artery by Dr. Howard Kelly, of Baltimore.

DR. J. HENRY CARSTENS, Detroit. The specimen and the paper of Dr. Lynds are very interesting indeed, and the specimen itself shows what can be done by a skilled operator. But I would not advise any such enucleation, simply because it is bad practice in all cases I have seen of that kind. I have never had any myself but that died when so treated. The method suggested by Dr. Longyear of simply sewing up the sac and allowing the placenta to come away through the vagina is the only correct one, especially if you have not all the facilities and assistance which large hospitals afford. I would not like to have it go on record that it is always *good practice* to enucleate the sac in the manner described by Dr. Lynds. It can only be done occasionally, and only then by the most skillful physicians.

The paper of Dr. McColl, like all of his papers, was to the point and covers the ground thoroughly. In considering these cases, here is where the trouble comes in. A number of them get well without any operation, simply because it is extraperitoneal, or the hemorrhage is through a small part of the sac where there is only a little placental tissue, and hence where there will be little hemorrhage. It is limited to the sac, it having ruptured, and the placenta to a certain extent is not injured, but the result is that it ceases to grow, the patient makes an ultimate recovery, and the blood is absorbed. Then we have other cases where this does not take place, where rupture occurs through the placental tissues direct or its blood vessels, and you have hemorrhage and the patient dies. The point simply resolves itself into those cases which require operation, and those which do not. There is where we must draw the line, and we cannot make it too strong. I have physicians tell me that their cases of extra-uterine pregnancy get well without operation, and that some

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of those that are operated upon die. This may be largely true, for nature is very kind. There is a constant tendency on her part to preserve life, to compensate for injuries. But sometimes nature is inadequate, and she needs the assistance of a skilled physician or surgeon. The question simply resolves itself into the one point of diagnosing the cases properly. If a woman with the symptoms mentioned by Dr. Lynds and Dr. McColl has absolute sterility, with more or less uterine and ovarian trouble, suddenly ceases to menstruate and skips a month, she is in a dangerous condition. Ninety-nine times out of a hundred she has extra-uterine pregnancy. If she goes on seven or nine weeks without menstruating, and falls down and faints, or suddenly gets a pain, these are suspicious symptoms, and you should be on the lookout. I saw a case a short time ago where a woman was perfectly well on going to bed, but the next morning, or during the night, she woke up, felt faint and weak. I put my fingure on her pulse, and it was 100. In two hours it was 110, and in six 120. In these cases it may reach 130 or 140. She said she felt all right, had no pain, but was very faint. When you have a patient like that, you can rest assured that the woman has internal hemorrhage. You may put a thermometer in her mouth and find no temperature, the indications being that everything is all right so far as the temperature is concerned; but that woman, you may be sure, has extra-uterine pregnancy. Ordinarily we can diagnose it, but sometimes they are exceedingly difficult to diagnose. There may be no tumor, blood in the peritoneal cavity may be liquid, and still the woman dies from internal hemorrhage unless relieved. These are the kind of cases that must be carefully watched. Nature sometimes stops the hemorrhage, and sometimes it disappears, and the woman feels well. In a week or ten days she will have another spell. Patients with such symptoms ought to be carefully watched, and placed in a condition for an operation to be done immediately, even if they should not need it. They ought to have counsel,

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and the assistance of an abdominal surgeon. So the point I would emphasize is the question of diagnosis. We cannot be too careful with these cases. There are cases that should not be operated upon, but there are others that require an operation.

Dr. McColl has shown that we have to deal with different kinds of cases, and that there is some difficulty in differentiating the one from the other. I would rather operate on a case, if it does not need it, than to let it go and risk the consequences. There is no trouble in controlling hemorrhage, and if it is an extra-uterine pregnancy, there is little or no danger attached to the operation.

A word with reference to what Dr. Graves has said, namely, that we should approach such cases by the vagina. I desire to say that the vagina contains more than forty different kinds of microbes, and it is a most difficult thing to keep aseptic. It is bad practice to operate in this way, because you do not know what you are doing. You go it blind. If a woman needs an operation you should go right into the abdomen, open it up and see what you are about, put the woman in the Trendelenberg position, if necessary, and there is no trouble at all to stop the hemorrhage. I do not care how severe it is, or how much blood there is in the abdominal cavity, you can tie the ovarian and uterine arteries without any trouble; can establish drainage, and see what you are doing. There is no more difficulty in operating in this than the other way, if you do your work aseptically. If the case requires an operation, do not try and operate through a little opening in the vagina. Open up the abdomen good and large, if necessary. Do your work thoroughly and perfectly.

With regard to transfusion, it is a very good thing, but I would not do it in the manner mentioned. Transfusion of the femoral artery is a dangerous thing. Its after effect is very likely to produce an aneurism. We have a simple way of performing transfusion. Therefore, I would operate on these cases of extra-uterine pregnancy or internal hemorrhage

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that are so low, or absolutely pulseless, by using subcutaneous transfusion, resorting to it while I am operating, simply with the hypodermic syringe attached to a Davidson needle, injecting under the skin this saline solution. It is the simplest and easiest method you can adopt. You can inject it in the side of the breast, side of the abdomen, or on the thighs. I have injected, in some instances, a quart or two quarts, and in fifteen minutes could not find it. It has been absorbed, and has gone into the circulation almost as quickly as though you had injected it in the femoral artery. This method of transfusion is just as efficacious as any other. It is so simple that any general practitioner can carry it out, and I want to say that it is just as applicable after a railroad injury as of any other where there has been loss of blood, or after cases of post-partum hemorrhage.

DR. MINAR. How large a syringe do you use?

DR. CARSTENS. I use either a little or a big one, but I like to have a big one, if possible.

DR. S. C. GRAVES. I would say that there is a principle in the practice of pelvic surgery which, in my mind, ought never to be ignored, and that is this, any inflammatory mass which is susceptible of enucleation ought to be approached every time through the abdominal cavity; but any inflammatory mass which is not susceptible of enucleation ought never to be approached through the abdominal cavity.

DR. EUGENE BOISE. I desire to say a few words with reference to this matter of transfusion. In cases of hemorrhage the method Dr. Carstens recommends is very admirable, but it is occasionally the case that we wish to transfuse in cases of comparatively slight hemorrhage, complicated with severe shock. In such cases subcutaneous injection is not the thing. You want to inject either in the artery or vein a hot solution of 120°, because of the influence of the heat on the ganglia which lie in the musclar tissues of the small arteries. The arteries are in a state of contraction, and the influence of the

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hot solution thrown into the circulation acts as a sedative to those ganglia, and helps to bring about a state of relaxation of the muscular fibers of the arterioles. In this respect transfusion of the vein or artery is far superior to transfusion of the subcutaneous tissue, because you not only get the influence of the fluid injected, but the rapid, direct sedative influence of the heat on those ganglia which control the muscular action of the arterioles, helping to cause relaxation of the arterioles, which are in a state of spasm.

DR. CARSTENS. You make a distinction between shock and debility from hemorrhage?

DR. BOISE. In case of hemorrhage subcutaneous transfusion is admirable.

DR. JOHNSTON. I want to say a few words in reference to tubal abortion, and to call attention to the differences between it and tubal rupture. Dr. Carstens has given a beautiful description of a case of tubal abortion. As the prognosis is somewhat different, an attempt should always be made to differentiate between these two conditions. The pain of a tubal rupture is much more severe, and comes on more suddenly than that of a tubal abortion. The hemorrhage in a tubal rupture is often greater than in an abortion; but the loss of blood in the latter condition is more apt to recur. In the former the hemorrhage is apt to be extraperitoneal; in the latter, intraperitoneal. A tubal abortion may be complete or incomplete, the ovum in the former case being expelled into the abdominal cavity through the abdominal end of the tube. Owing to the absence of pain in tubal abortions, the correct diagnosis is apt to be overlooked, and owing to the tendency to repetition of the hemorrhage these cases are more apt to need operation than cases of tubal rupture.

Dr. Lynds said that the only treatment of cases of extrauterine pregnancy was surgical. I believe the treatment should be surgical or expectant. If a case is diagnosed be-

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fore ruture or abortion has taken place, it should be operated on immediately, as there is no knowing when fatal hemorrhage may set in. After rupture has occurred, if the hemorrhage has stopped and reaction has set in, watch the patient carefully, and if no further hemorrhage occurrs, treat the case expectantly. But if the middle of pregnancy has been passed, a section should be made in all cases to remove the products of conception, as the fœtus of the latter half of pregnancy is not readily absorbed.

Dr. Graves is correct in the position he takes concerning pelvic hæmatoceles. These should not be operated on unless severe pressure symptoms are produced by their presence, or unless suppuration has occurred. The clots in them will not break down and form pus unless germs are present. When pus is formed in them, it shows that adhesions have formed between the sac of the hæmatocele and the intestine, through which the bacteria pass, and it always shows that rupture into the intestine is imminent. We should prevent this rupture by opening the hæmetocele through the vagina.

Dr. Lynds (closing the discussion). I shall not attempt to answer all of the points that have been brought out in the discussion. It has been said that in the intermediate cases, those cases which rupture between the folds of the broad ligaments, and in which blood clots form, we should leave them alone. I do not believe that is good practice. You have no warning of any trouble in the majority of such cases, until you have serious trouble, namely, rupture into the peritoneal cavity, and the patient bleeds to death in a short time unless immediately operated on. I quoted one such case in a hospital under the best of care, where the patient died before being operated on. This is true of a great many cases. Frequently they need our immediate care. Do not leave them alone; operate on them when they can be operated on with comparative safety. You can control the hemorrhage by tying the arteries, or you can pack the cavity and control hemorrhage, and nearly all cases will get well if operated on properly and early.

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It is perhaps true that some of them will get well without operation, and I do not deny it, but the cases are comparatively few. Frequently with the first rupture of the tube there are no marked symptoms, or the patient does not have as marked symptoms as she does in the secondary rupture. In the majority of cases occurring in the peritoneal end of the tube, the primary rupture is between the folds of the broad ligament, and the amount of hemorrhage is limited. The secondary rupture is through the broad ligament and peritoneum into the peritoneal cavity, where you have no such limitation of hemorrhage, and the patient may bleed to death very early and rapidly.

In regard to tubal abortion, it does not differ in its treatment from rupture of the tube. The fœtus and membranes are perhaps expelled, wholly or partially, through the abdominal end of the tube, the same as through a ruptured tube. You have practically the same conditions. They are a little easier to operate on, as you have simply to ligate the broad ligament, the same as you would in removing the tube.

In regard to the usual history of women being sterile for a considerable period, and with symptoms of diseased pelvic organs, it does not always hold true. I have quoted two cases, in one of which I removed an interstitial pregnancy twenty months after the patient had borne a child at full term, and in the meantime had had an abortion. In the other case the patient had a child less than a year and a half old. This case I diagnosed before it had ruptured. To say that the chances are that nature will take care of these cases which rupture between the folds of the broad ligament is a mistake in many cases, and I do not believe it is good practice to follow the expectant plan of treatment even in these cases.

Dr. McColl (closing the discussion). I have little to say except to dissent from what the doctor said, that in the majority of cases we have primarily tubal rupture between the broad ligaments. We do not. In the majority of cases on

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which we operate we have rupture through the walls of the tube into the peritoneal cavity, and it rarely occurs that rupture takes place between the folds of the broad ligaments; and unless we have intense pressure from secondary hemorrhage, we do not have secondary rupture into the general peritoneal cavity. The rupture takes place primarily in the majority of cases through the wall of the tube into the peritoneal cavity proper.

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SOME POINTS RELATIVE TO THE USE OF FORCEPS AND ANTISEPTICS IN OBSTETRICAL PRACTICE—THE WALSCHER POSITION.

COLLINS H. JOHNSTON, M. D.,
Grand Rapids.

The application of forceps in childbirth is the most frequently performed and the most important obstetrical operation in this country. American obstetricians resort to instrumental delivery much more frequently than many of their foreign *confreres*. Uterine inertia and a prolonged second stage, which are the most frequent conditions for the relief of which *we* apply forceps, are not recognized as indications for instrumental delivery by Leopold and many other German obstetricians. Nothing but the appearance of positive signs of danger to the mother or child justifies the use of forceps in the Dresden Clinic, and I have seen a primipara struggle away two days and five hours after rupture of the membranes before instruments were applied, the indication then being irregularity of the fœtal heart. The result was a dead child. Weak pains *are*, however, recognized as a legitimate indication for forceps at the Basel Clinic, and when the proper conditions for their application are present, the second stage of labor is never allowed to exceed four hours. A comparison of some of the results obtained at these two clinics will therefore be of interest. In the *Archives fur gynakologie*, Band 36, Heft 1, is a study of 7,322 cases of labor in Leopold's service, and in the same journal (Band 47, Heft 1) is a report of 156 forceps cases at Basel. Forceps were applied in 2.8 per cent. of the cases at Dresden,

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and in 5.33 per cent. of the Basel cases. The maternal mortality at Dresden was 3.4 per cent., at Basel 1.28 per cent., but in no case in either institution was death attributed solely to the use of the instruments. The infantile mortality at Dresden was 17 per cent., at Basel 10.2 per cent.

Turing to our own country, we find a report of one thousand cases of labor in the Sloane Maternity published in the *American Journal of Obstetrics*, April, 1891. Forceps was applied in 8.3 per cent. of the cases—three times as frequently as at Dresden—and in 71 per cent. of the cases the indication was uterine inertia or powerless labor. The average duration of the second stage in these 1,000 cases was three hours. The maternal mortality was nil, the infantile 12 per cent.

With suitable aseptic precautions the use of obstetric forceps after the child's head has entered the pelvic cavity is a comparatively easy and safe procedure. At the brim, however, it is often one of the most difficult of obstetric operations, requiring for its successful performance an amount of tact and skill that is not possessed by every practitioner, owing in part to the deplorable absence of practical obstetric teaching in most of our medical schools.

The principal causes of delay at the pelvic brim are unusually large size or abnormal position of the fœtal head, and contracted pelvis. The generally contracted pelvis, which is the most common of the different varieties, is more frequent in this country, I believe, than it is considered to be. There is a general relation between the height of a woman and the size of her pelvis. A tall woman usually has a large, roomy pelvis; a short woman, one below the average size. On the other hand, there is no definite relation between the size of a woman and that of her baby. The proportions of the latter are determined as much by the size of the father as of the mother. A short woman with a small pelvis and a tall husband may produce an average-size or large baby. The

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result is a difficult labor, due in great part to the unrecognized contraction of the pelvis.

The diagnosis of retention of a fœtal head at the pelvic brim is not always a simple matter. The prolongation of the head due to the unusual amount of moulding necessary to permit of its passage through the bony obstruction, and the formation of a large caput succedaneum, often deceive the operator as to the amount of progress the child has made. A correct estimate is more easily made by abdominal palpation than by vaginal examination. I have seen such an expert as Leopold apply forceps to a head which he thought had entered the pelvic cavity and find it still engaged in the pelvic inlet.

As a rule, no living child should be perforated until a tentative effort is made to deliver with forceps. I have seen normal labor occur with a full-term living child, and a conjugata vera of seven centimeters, which is the size of pelvis at which some operators perform an elective Cæsarean section or symphysiotomy. I shall never forget a most interesting case I saw at Dresden. The patient was a primipara, eighteen years old, with a flattened pelvis and a conjugata vera of 6.6 to 7 centimeters. Leopold considered the pelvis too small for forceps or version, and excluded Cæsarean section and sympysiotomy because the woman had been examined *per vagina* so often that she was probably already infected. He, therefore, concluded to return in two hours and perforate; but when I returned at eight o'clock to see the operation, I found that the child had come spontaneously half an hour before. It was strong and healthy, and weighed six and one-fourth pounds.

The chief elements of danger in forceps deliveries are septic infection of the mother and fatal compression of the head of the child. The danger attending the high operation is much greater than with the low. The infant mortality at Dresden with the latter operation is 10.75 per cent.; in the high, 26

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per cent.; 32 per cent. of the mothers have fever after the low operation; 42 per cent. after the high.

The less the force that is required to overcome the obstruction offered by the bones of the pelvis, the less is the pressure exerted by the forceps upon the fœtal head, the fewer are the traumatisms of the maternal tissues, and the less is the danger of septic infection. To one means of diminishing the amount of tractile force necessarily used in the high operation, and of doing away with the use of forceps altogether in some cases, I wish to call your attention.

The following brief report of a recent case will serve to emphasize my point: Mrs. A., primipara, aged twenty-three years, had been in labor several hours when the sudden onset of weakness and irregularity of the fœtal heart made it advisable to terminate the labor immediately in the interests of the child. The attending physician, who was an accomplished obstetrician, had determined to his own satisfaction that the head had passed the superior strait of the pelvis, and had exerted his utmost strength without securing any appreciable advance of the head. Becoming convinced that it was still engaged in the pelvic inlet, I suggested that the patient's lower extremities, which were flexed upon the abdomen in the usual manner, be extended and allowed to hang down over the edge of the bed. This was done; but not believing that the change in position would exert any influence upon the progress of the child, the operator did not in the least diminish his tractile force. The result was that in less than one minute the head was very unexpectedly delivered, with a deep laceration of the vagina and perineum extending into the rectum.

I have seen but few references to the Walscher position in American literature. It has long been known that there is a certain amount of mobility in the joints of the pelvis, especially during pregnancy. But it remained for Walscher in 1889 to show that the antero-posterior diameter of the pelvic inlet is not of a constant length, but varies with the position of the body. The sacro-iliac synchondroses are true joints with syno-

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vial membranes, articular cartilages, and strong supporting ligaments. The innominate bones revolve to a limited extent about the sacrum upon an axis passing through the sacrum several centimeters below the level of its promontory, and Walscher found that when the pelvis was, as it were, extended, the conjugata vera was from nine to fifteen millimeters longer than when it was flexed upon the trunk. The universal position of a woman when forceps is applied has been upon the back or side, with the thighs flexed upon the abdomen. In this position the symphysis pubis approaches the promontory of the sacrum, and the true conjugate of the pelvic inlet is shortened six to seven millimeters. On the other hand, if the thighs are forcibly extended, as in the Walscher position, with the patient upon her back and her lower extremities hanging down over the edge of a table or bed, considerable traction is exerted upon the anterior portion of the pelvis; it is forcibly extended, and the conjugata vera is lengthened six to eight millimeters. The increase in length, therefore, of the antero-posterior diameter of the pelvic inlet in the Walscher position over that in the position usually assumed in forceps operations is from one to one and a half centimeters. The importance of this fact, which has been many times demonstrated upon the living subject as well as upon the cadaver, is more apparent when we consider that the normal length of the conjugata vera is but ten centimeters.

By placing women in this position in the first stage of labor Fehling and others have secured spontaneous births in cases where forceps or other instrumental means had been necessary in previous labors. In Leopold's clinic the number of Cæsarean sections and perforations have been materially reduced in the past two years by performing prophylactic turning with the patient in the Walscher position. After a head has entered the pelvic cavity, this position should be dispensed with, as by the sinking in of the lower end of the sacrum and coccyx the antero-posterior diameter of the pelvic outlet is shortened.

As already stated, the chief danger to the mother in forceps

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delivery is septic infection. The increased amount of vaginal manipulation favors the introduction of pathogenic germs into the birth canal, and the more or less extensive lacerations of the cervix, vagina, and perineum favor their absorption. The morbidity after instrumental delivery is therefore much greater than after spontaneous birth. A recent writer has stated that the observance of great cleanliness, and the use of antiseptics in midwifery, have so completely destroyed the evil consequences of the streptococcus pyogenes that post-puerperal diseases are now among the curiosities. I regret to say that the frequent cases of puerperal fever in Grand Rapids, and the four deaths from this disease in one week in the practice of a single physician, show that the germs of puerperal sepsis are still alive in this city. As long as professors in medical colleges teach their students to make frequent vaginal examinations during labor, and to give daily vaginal douches during a normal puerperium, we will continue to see deaths from puerperal fever.

There is still a tendency on the part of many well-informed men to attribute their cases of puerperal fever to autoinfection, to pathogenic germs that are supposed to be present in the genital canal before the onset of labor. Now, the sooner we recognize the fact that almost every case of post-partum sepsis is due to the introduction of pathogenic germs directly before, during, or after labor, the better it will be for our patients.

There are many men who do not consider it nessary to give vaginal douches before or after a *normal* labor, who still think it necessary to disinfect the vagina before, and perhaps after, instrumental delivery. How to obtain asepsis in obstetrical practice is still a mooted question, and I wish to direct your attention to some recent experimental work of Krœnig's on this subject.

It was long taught that self-infection of a parturient woman was common, and in those rare cases of pregnancy in women with pus tubes, pelvic abscess, etc., we must admit its possi-

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bility. The old belief, however, was that micro-organisms which were introduced into the vagina of a pregnant woman by cohabitation, vaginal douches, etc., weeks or months before the end of gestation, found conditions favorable for their continued existence, and could infect her during or after labor.

In order to settle this much-disputed point, Krœnig, of Leipsic, who is a most careful and enthusiastic obstretrician and bacteriologist, introduced various kinds of pathogenic germs into the vaginæ of a considerable number of women during the later months of pregnancy, and afterwards, at various intervals of time, made cultures from the vaginal secretions. None of these women were ill after confinement. In twenty cases the bacillus pyocyaneus was used, and in ten to thirty hours they had entirely disappeared from the vagina. In fifteen cases staphylococci were introduced, and in every case the vagina was again aseptic in from six to twenty-four hours. Streptococci were used in but three cases, as only women in the seventh or eighth months of pregnancy were thought suitable for experiments with this germ. In six hours they were destroyed by the germicidal properties of the vagina. The longest time required for the destruction of any of the pathogenic germs used by Krœnig in his experiments was two days. Hence it would seem that autoinfection, in the sense that germs introduced into the vagina weeks or months before labor can live and give rise to puerperal fever, is impossible. Krœnig concludes that we can always consider the vagina of a pregnant woman to be aseptic in forty-eight to seventy-two hours after the introduction into it of any foreign substance, and that the vaginal secretion is a powerful antiseptic and disinfecting agent.

Now supposing the vagina of a pregnant woman becomes infected, can we by copious vaginal injections render it aseptic? To determine this, Krœnig made the following experiments. Bouillon cultures of stapylococci were introduced into the vaginæ of seven pregnant women, pyocyanei in seven, and

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streptococci in one. At the end of one hour the vaginæ were irrigated with two quarts of lysol solution, and in a few cases the vaginal walls were at the same time rubbed with two fingers. Cultures made from the vaginal secretions at the same intervals of time as in the former cases showed that in no case was the number of germs materially decreased by the antiseptic injections. On the other hand it was evident that vaginal douches of antiseptics lessened the natural immunity of the vagina. For instance, in ten pregnant women whose vaginæ were injected with staphylococci and then syringed out with lysol, the average time taken by the vaginal secretions to destroy the germs was thirty-six hours—just twice as long as when no antiseptic injections at all were used.

Hence it is evident that the use of antiseptic vaginal injections before and during labor, with a view to sterilizing the vagina, are not only useless, but positively harmful.

These important experiments of Krœnig's have already been productive of good results, for during the past two years all vaginal injections, with but very few exceptions, have been omitted in Zweifel's clinic, not only in normal, but also in operative labors. The results have been considerably better than formerly when injections were used.

From January, 1886, to April, 1889, vaginal injections were used in all normal births in Leopold's clinic at Dresden. Seventy-eight to eighty-three per cent. of the women were without fever during the puerperium. From April, 1889, to January, 1892, injections were discontinued in all normal labors. The number of women who remained free from fever increased to ninety-one per cent.

The only respect in which a forceps case differs from a normal labor is that the operator's hands and instruments are introduced more or less into the vagina and lower section of the uterus. If only these are sterile, the danger of infection is not increased by the operation, and in these cases no reason exists for antiseptic injections. But everything coming in contact with the patient should be surgically clean. From

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the beginning to the end of every case of labor the hands of the obstetrician and his instruments should be as aseptic as if about to perform a Cæsarean section. After the hands are disinfected they should not be dried or allowed to touch the bedclothing or wearing apparel of the patients, as these are probably contaminated by many different kinds of bacteria from the patient's skin, etc. Before every internal examination or instrumental interference the long pubic and vulvar hair may be cut short with scissors, and the vulva, nates, thighs, pubes, and lower abdominal wall should be washed for five minutes with warm water, soap, and cotten, always working from the vulva towards the periphery in order that no infecting matter may be carried from distant parts towards the vaginal orifice. Especial care must be taken to clean the folds between the small and large labia, and between the latter and the thighs. After washing away the soap with fresh water the parts should be washed three minutes with a 1 to 2,000 solution of bichloride. To avoid infecting the hand while supporting the perineum, a large, moist compress of cotton should be laid over the anus. But no vaginal douches of any kind should be permitted.

When in labor the cervix uteri is well dilated, the membranes rupture and a copious irrigation of the lower part of the birth canal with liquor amnii takes place. This is much more efficacious in sweeping infectious germs from the vagina, if any are present, than an ordinary vaginal injection, since it takes place from within out, while a vaginal douche is given from without in, and pathogenic germs existing in the lower part of the vagina are easily carried higher up. Buchner also says that fresh liquor amnii possesses the same germicidal properties as blood serum. After the child is born the remainder of the liquor amnii escapes, and more or less bleeding follows from the placental site and the lacerations which always exist in the cervix and vagina. These discharges secure an aseptic condition of the birth canal much better than a vaginal douche of antiseptic agents.

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DISCUSSION OF DR. JOHNSTON'S PAPER.

DR. J. J. MULHERON, Detroit. I was very much interested in the portion of the paper which I heard, and chiefly because of the radical views which the doctor has reproduced on the subject of asepsis. It would seem from them that there is considerable uncertainty as to the benefits of existing means for securing asepsis. The results reported by observers in this country show what a vast improvement there was following the introduction of such means. There was a large reduction in the mortality rate, and we had begun to feel that we had about reached perfection in the matter of taking care of lying-in women. Now, however, we are to be set back to the old condition which asepsis was thought so much to have improved. It is difficult for the working practical obstetrician to decide from the experiments mentioned in the paper, what the position is he has really to assume in these cases. I believe, however, that it would be safe for us not to accept these views too readily. We know what vast improvements have followed the introduction of asepsis and antisepsis into the lying-in room. We know that deaths from puerperal infection were formerly very frequent, and that now they are comparatively rare. It is very natural for us to conclude that the results have been due to the introduction of antisepsis and asepsis. I, for one, should hesitate for some time to give up the use of artificial means for securing asepsis and antisepsis in the lying-in room. The views, as expressed in regard to the frequency of manipulations, are correct; but it seems to me, that it would be unsafe for us to go away as a result of this paper and discontinue the use of the precautions which, during the past ten years, have become to be regarded as all important in the interest of the lying-in woman. We may

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not disregard the fact that the women whom we attend live largely under artificial conditions, and that artificial means are necessary to counteract the evils of such conditions.

DR. H. W. LONGYEAR, Detroit. The sentiments expressed by Dr. Mulheron are a good deal my own. There is one point I do not think the writer brought out that I would like to have him express his opinion on, and that is, in the experiments with the different germs in the vagina, the gonococcus was not mentioned. Now we know the vaginal discharges are often charged with gonococci, and we know that the gonococcus, if present, gives rise to puerperal infection, producing a great deal of trouble, not only to the woman, but to the baby's eyes afterwards. The inflammation passes up from the vagina into the woman's uterus and fallopian tubes, and it seems to me that antiseptic injections, given immediately before labor is commenced, are a prophylactic against that kind of poisoning. By this means you can wash out a great many of these germs, and render them harmless. It is a practice we follow at the Woman's Hospital in Detroit, giving the woman a bichloride douche when taken into the operating room, when labor has commenced. During the last year we have had no deaths from puerperal infection, and not a case of ophthalmia neonatorum, and we have had something like a hundred and ten labors—I do not remember exactly how many. I do not think it is the streptococcus and staphylococcus that always cause these troubles, but we have an auto-infection from the gonorrhœal virus that must not be lost sight of as an ætiological factor.

The other points in the doctor's paper, regarding manipulation and so on, I agree with. It is very easy to manipulate the parts too much, and by this means we are more liable to introduce septic germs in spite of all other antiseptic precautions.

DR. W. P. MANTON, Detroit. I was greatly interested in what the doctor said because I have been over much the

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same ground in the same clinics that he refers to. I did not understand him to claim that antiseptics or the aseptic treatment was to be given up, but on the contrary, increased vigilance in this direction must be observed. Dr. Mulheron, I suppose, meant douching, although he did not use the word, and other antiseptic precautions which have been in vogue for the past ten years. Certainly this practice should be looked upon simply as a step in the development of perfect obstetrical practice, just as the use of the spray is looked upon as a development in abdominal surgery. I remember the days before we resorted to the use of the spray. I went through the spray business at the Samaritan Hospital, London, and used it here for a number of years myself. I think there are now few abdominal surgeons who ever use the spray. And so, too, a large number of German obstetricians have abandoned the douching of patient previous to and after delivery, unless there has been considerable manipulation of the parts, or unless there may have been the introduction of septic matter through unclean instruments. I have abandoned the use of douching except in certain cases where, as Dr. Longyear says, there might possibly be gonococci present. But in ordinary cases I have abandoned its use entirely. I have not used it for several years. I believe we cannot be too careful in our manipulations; we cannot be too careful in our personal cleanliness, and seeing that our instruments are perfectly aseptic. If we work with clean hands and clean instruments, there is very little need of antiseptic douching. The cleansing of the external parts, as pointed out by the essayist, is necessary without a doubt, because in many cases the patients themselves are not very cleanly in their habits, and perhaps the surroundings are not very clean; but I think if we are clean ourselves, and our instruments are likewise, we will have attained in obstetrics to a point we have already attained in abdominal surgery.

Dr. J. H. Kellogg, Battle Creek. It seems to me a uterine douche is useful, not only in killing germs, but in remov-

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ing fluids which are decomposable. It is impossible to perform an obstetric operation in a perfectly aseptic manner or without introducing some germs into the vaginal canal. I do not think it is possible to cleanse the external parts so thoroughly as to make sure that not a single streptococcus will be introduced into the vaginal canal; consequently the important thing in these cases, as in cases of abdominal surgery, is to leave the parts thoroughly clean. I see no particular advantage in the use of antiseptics, but the vaginal douche is a valuable addition to the cleansing of the external parts. Antiseptics may be useful in killing germs that are present on the external parts, but I prefer to use the plain hot water douche internally as a means of cleansing before an obstetric operation. Even after the birth the douche is useful, because sometimes clots lodge in the folds of the vagina. Sometimes fluids remain behind, or small fragments of placenta, which will be washed away by a current of water, but will be left behind if the douche is not employed. The hot douche is a stimulus to uterine contraction. If we need to do anything to stimulate the normal process of labor, or to facilltate it, it seems to me the hot water douche is most valuable in relaxing the perineum and stimulating uterine contractions.

In our obstetric clinic, in connection with our medical mission in Chicago, we have had a hundred and fifty obstetrical cases within the last year, and most of them were in the worst hovels and poorest tenement houses of Chicago, on Clark Street and about Custom House Place. In many cases there was a strong probability of the presence of plenty of gonococci. These cases were attended by our nurses, who exercised all the precautions they could, cleansing the external parts, etc., employing the vaginal douche and antiseptic pads, and there has not been a single case of puerperal fever. There is certainly use for the douche, if not to kill germs, to cleanse away decomposable material which may be food for germs.

Dr. E. G. Minar, Bay City. I think Dr. Manton's re-

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marks very forcibly illustrates a step taken towards more thorough and rational asepsis by the profession in their obstetric practice, and demonstrates the fact that we cannot apply any fixed, hard, and fast rules to each and all cases. When we are called to attend cases in private practice among the lower class, we expect to find a variety of virulent germs present around the vulva and labia, and in the vagina. In such cases we would employ, in addition to thorough asepsis of our hands, the antiseptic preparation of our patient for delivery. If we are called, on the other hand, to see a woman who belongs to a family of the educated and higher class. we hardly expect to find streptococci and gonococci of various kinds present, and consequently we would not make the same preparation for delivering that patient that we would in the other case. In hospital practice, however, the cases are more or less on a certain level, and in charitable institutions pretty much the same condition is present in all, hence the rule of applying this principal may be more proper. I do not think that I would resort to the vaginal douche indiscriminately. I think there are cases where we ought to use it in an antiseptic form, and as hot as it can be borne by the patient, in order to accomplish what Dr. Kellogg has said, i. e., to wash away decomposable debris; at the same time, in other cases I would not think it necessary. The repeated use of the douche throughout labor is, in my opinion, decidely detrimental to the patient, because by so doing you wash away a large amount of mucus that is normal to the parts, and which, acting as a lubricant, helps materially the passage of the child onward through the genital canal and pelvic strait. So we should use our judgment in private practice as to the use or non-use of the douche prior to and during labor. But after the labor is over, especially if it has been a tedious one, I consider the use of a single hot vaginal douche, containing some antiseptic, imperative, and ought to be administered in nearly, if not all cases, not only because of the comfort it gives the patient, but to guard against the possibility of

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infection later. The frequent digital examinations necessarily made by the attendant during the latter portion of the second stage is quite liable to introduce pathogenic germs within the vagina. To this may be added the further danger of infection from the escape of fecal matter from the mother, often occuring during the last few pains, and soiling the vulva and vaginal outlet. These germs thus introduced may find a ready entrance into the system because of the abrasions or lacerations of the tissues present in some degree in nearly all cases. It is for the purpose of washing away these sources of possible infection to the mother, and also because of the tonic and constringing effect upon the swollen tissues, that I resort to the douche at the end of the third stage as a routine practice. I addition to this single douche, I have been accustomed to use also a suppository of iodoform for at least three days following confinement, and find it works admirably. It does the patient no harm, it eases my conscience, and I have pretty fair results.

I would like to ask Dr. Johnston to explain the method of Walscher in which the forceps are applied.

Dr. Johnston. I am glad to see so much harmony of opinion among us on this subject. I wish to say in reference to the remarks made by Dr. Mulheron, that the latter half of my paper was a plea for asepsis in obstetrics. He did not seem to take in that fact, and I was particularly anxious to impress this fact upon your minds; that the administration of vaginal injections before or after labor, as I view it, would be contrary to the existence of asepsis inside of the vagina, for the vagina is already aseptic. The antiseptics that I believe in using should be applied to the parts outside of the vagina, as stated by Dr. Minar, so that we are in perfect harmony on that subject.

As to gonococci, there is no such thing as puerperal fever due to them in the ordinary sense. Gonococci never kill a woman after confinement. They produce endometritis, with fever, and they do the same outside of the lying-in

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room; but so far as death from puerperal fever goes, gonococci should not be taken into consideration.

The injections Dr. Longyear refers to must be used in the interest of the mother, or of the child. If they are in the interest of the mother, they do harm. How many of us expect to render the urethra of a man suffering from gonorrhœa aseptic with injections? How many of us would expect to sterilize the vagina, cervix, and cervical canal of a woman with gonorrhœa by means of injections? There are millions of gonococci that no vaginal douche can reach. The small amount of germs, in the condition Dr. Longyear mentions, which the vaginal douche will bring away, is not to be considered when compared to the injury done to the germicidal powers of the birth canal. According to the latest experience, these douches not only do no good in gonorrhœal cases, but they take away from the normal acidity of the vaginal secretion and do harm. If vaginal injections are used in the interests of the child to prevent ophthalmia, the same result may be more safely and surely accomplished in another manner. It is only in rare cases that the child's eyes are forced open in labor, and exposed to contagion. If prophylactic measures are thought best, you can use a solution of nitrate of silver or boracic acid, and by so doing you do not hurt the mother, and you do the child as much or more good as by the vaginal douche. If the vaginal injection of hot water is necessary to get clots out of the vagina immediately after labor, it is necessary twelve, twenty-four, and even forty-eight hours after. To be consistent, Dr. Kellogg should give them right along for several days.

With reference to the Walscher position, the woman is laid on her back, with her hips over the edge of the bed, and the legs allowed to hang down. It is better to put her on a table so that her feet will not so quickly touch the floor.

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ULTIMATE RESULTS IN GYNECOLOGICAL OPERATIONS.

EUGENE BOISE, M. D.
Grand Rapids.

The teachings of published reports of operations, and the lessons drawn from the tables of statistics, as usually given, tend to impress upon our minds the feeling that the successful performance of an operation without the sacrifice of life constitutes surgical success.

This is almost necessarily true because of two factors; first, the natural and almost unavoidable feeling on the part of the surgeon that with recovery from the operation ends the responsibility of the surgeon; and second, the difficulty of securing accurate statistics as to the ultimate results of such operations.

This difficulty can be appreciated when we consider the length of time which must necessarily elapse after many operations before correct or just judgment can be given as to the final condition of the patient, as well as the impossibility of retaining a hold on these patients long enough to gain accurate reports.

But that the responsibility of the surgeon does not end with the immediate recovery has long been appreciated by many, and is becoming recognized by the majority of operators. Naturally the first and great anxiety of the surgeon should be that the operation should be performed without the loss of life, but he should at the same time continually bear in mind that restoration to health, as complete as possible, is the next and great desideratum, and that this shall be accomplished

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with as little sacrifice of function and tissue as may be compatible with the fulfillment of these two indications, preservation of life and restoration to health.

But in the anxiety to be conservative, good judgment is demanded lest conservatism be the name under which incomplete surgery masks itself. True conservatism is that which best conduces to the life, health, and welfare of the patient, and demands educated diagnostic ability, as well as the possession of a skilled surgical technique.

It will not be possible within the limits of this paper, which can be merely suggestive in its nature, to attempt to point out the features in our generally accepted technique which should be modified in order that we may obtain the highest results as to perfect recovery; but I may be allowed to direct attention to a few points, which, although recognized and acted upon by many, escape the notice and thought of others.

In abdominal sections the methods by which danger of death from hemorrhage, shock, or septic peritonitis may be lessened have been dwelt upon so fully and so frequently, that further words on my part would be useless; but the methods by which post-operative adhesions may be prevented or lessened, though known theoretically, are too often overlooked or neglected at the time of operation, even though the possibility that such adhesions will largely prevent the good effects of the operation, if they do not endanger life, is fully understood.

Concerning them much has been written, and many ways have been tried to prevent them, but too little has been accomplished.

There are, however, a few facts that should always be borne in mind at the time of operation, and should influence our technique.

First, all influences that tend to impair the integrity of the epithelium of the peritoneum tend to promote the formation of adhesions. For this reason (apart from the ques-

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tion of shock) the abdominal incision should be as small as is compatible with dextrous work, and should be closed as early as possible, inasmuch as simple exposure to the air tends to impair the epithelium in a degree proportionate to the length of the exposure. Also, every time the peritoneum is touched by a foreign body the integrity of its epithelium is impaired; therefore all unnecessary manipulation of the intestines and abdominal viscera should be avoided, and when necessary should be made with as much gentleness as possible. Again, irrigation with sterile water impairs the epithelial surface, and predisposes to vexatious adhesions. It should therefore be omitted, except in those cases where its omission would give rise to greater dangers. In such cases a normal salt solution should be preferred, inasmuch as it is much less injurious to the epithelium than water alone.

Again, the practice of dry sponging, or of placing dry gauze sponges in the abdominal cavity to protect it from possible infection is unadvisable, as has been shown in a paper by Dr. Schiffer, assistant in Dr. Sænger's clinic. He narrates their experience and experiments, and draws conclusions that by the use of quite warm saline solution, in which the gauze compresses are wrung out (not dry), and with which they are kept frequently moistened while in contact with the peritoneum, the integrity of the epithelium is as little impaired as possible, and the probability of adhesions reduced to the mininum.

When adhesions have been separated during the course of the operation, raw surfaces result, and there will of necessity be more or less post-operative adhesions to the denuded surfaces. Many agents have been tried for the purpose of preventing this, such as sterilized oil, aristol, etc., but with incomplete success.

When large bleeding surfaces are left by the separation of extensive adhesions it seems necessary to control the hemorrhage by gauze packing, notwithstanding the injurious influence which this has in promoting extensive intestinal adhe-

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sions. It has occurred to me that a jet of steam could be used for hæmostasis, as advocated by Dr. Snegirjoff at the Moscow clinic*, and a glass drainage tube substituted for the gauze.

Of course the best efforts will not be able to prevent the formation of adhesions in all cases, but our aim should be perfection.

To avoid the adhesion of the stump to the surrounding intestines when the appendages are removed by one constricting ligature, many methods have been tried, such as the actual cautery, the free use of aristol, etc.; but the most promising method is to tie the broad ligament in sections (in suitable cases), thus leaving a comparatively linear stump, the raw edges of which can be whipped together by a continuous catgut suture.

The question of the prevention of post operative ventral hernia has met with the recognition it deserves, and has elicited full discussion, with no settled result other than that each operator continues to use the method to which he has been accustomed, and justifies himself by pointing out the dangers and disadvantages pertaining to every other method.

In my judgment the first step toward the prevention of ventral hernia should be the incision, which should be made through the rectus muscle, and not in the linea alba. The knife should be used till the fascia is divided, then the fibers of the muscle should be carefully separated, care being taken not to cut or tear them. The tendency of muscle so separated is, when contracting, to *close* the wound, the edges of the separated fibers become approximated, the strain on the overlying fascia is relieved or prevented to a greater degree than when the incision is through the linea alba.

In closing the wound at least three tiers of catgut should be used. For the peritoneum, a continuous suture of rapidly absorbable catgut. Next, close the fascia by interrupted sutures of sterilized, chromicized catgut, prepared to

* See Centralblatt for Gynecology.

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remain unabsorbed two months at least. It is not necessary to include the muscle, as by drawing the fascia together the muscles become closely approximated; and if the suture is passed through fascia and muscle, it is not easy to get perfect adjustment of the edges of the fascia, which is the most important feature in the closure of the abdominal wound. I have said that the suture should be interrupted rather than continuous, for the reasons that first—better approximation can be secured, and second—if infection occurs at one point, it can be confined more easily to that point, as when a continuous suture is used infection of one part of the catgut means infection of its entire length.

Finally, close the skin by a continuous suture of readily absorbable catgut.

Again, incomplete surgery is often a source of disappointment to the operator in the light of ultimate results.

The relief from the distressing symptoms resulting from inflammatory and degenerating changes of the uterus and its appendages is often entirely lost, or only partially attained by operation, because of the failure on the part of the operator to weigh carefully *all* the conditions and justly estimate the influence of each.

For instance, in cases of chronic salpingitis with displaced and diseased ovaries, many of us have rashly promised cure by the removal of the appendages, forgetting or overlooking the chronic metritis and endo-metritis which are associate causes of the complexity of symptoms from which the patient suffers. Others of us have trusted to the subsequent atrophy of the uterus to render it negative as a disturbing element; but the testimony of the most experienced operators is rapidly bringing us to the conclusion that where incurable disease of the ovaries and tubes necessitates their complete removal, it is mistaken conservatism to leave the uterus; that the most complete relief from existing symptoms, and the greatest security as to future health and comfort, will be attained by the removal of the uterus with its appendages.

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But the fact must not be lost sight of that the complete sacrifice of the generative organs of a woman is to be avoided when security from future invalidism can be attained in any other way. It is in recognition of this fact that such able efforts have been made and such strong arguments adduced toward saving a portion of one ovary and tube in all possible cases. I shall not attempt to argue this subject, inasmuch as the scope of this paper is not argumentative, but will say that there can be no argument if we can be certain that we can, by a resection, remove all diseased tissue. A tube left without its ovary is simply a source of danger; an ovary left without its tube may be a great source of comfort, or rather a great factor in the avoidance of the discomfort arising from a rapidly and artificially induced menopause, provided that the ovary is in all respects healthy, and free from fibroid or cystic degeneration.

It is argued, and justly, that if these diseased portions of the ovary be removed, and only a small portion of the healthy ovary be left, the advantage to the woman is incalculable. This is true, provided we can be sure that the diseased portion can be entirely removed, and that the remaining portion will remain healthy. I speak thus because I have been so many times obliged to make a second coeliotomy for the removal of an ovary which I had formerly left as being nearly healthy. Whether degenerative changes in an ovary become accelerated by the removal of the other, or not, I cannot say, but I have sometimes been surprised at the change in size and structure that a few months only would allow.

Now as to hysterectomy for cancer of the uterus, I know that I am speaking heresy, when I say to such an assemblage of experienced operators that I greatly doubt the propriety of confining one's self so strictly to the vaginal method in cases of cancer of the uterus.

It cannot be denied that the vaginal method is preferable to the combined method in that it lessens the danger of the shock, and to a certain extent of sepsis, and therefore pre-

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sents a smaller percentage of immediate deaths. But does this offset the greater danger of a recurrence of the disease? The two points of greatest importance as to permanent cure in cases of hysterectomy for cancer are to see and operate on the cases *early*, and when operating to get as far away from the uterus as possible.

But neither the eye nor the finger is a reliable guide to determine whether the disease has gone beyond the limits of uterine tissue. The formerly promulgated rule as to the mobility of the organ and perceptible infiltration of the broad ligaments is of no avail other than to determine against operation, except as a palliative measure when the least thickening is perceived.

Mackenrodt has shown by microscopical investigations divided nests of cancer cells in the cut surfaces which microscopically appeared healthy. It has also been shown that in cancer of the cervix the cancerous process follows the lymphatics not only of the cervix proper along the uterine vessels, but also those lymphatic spaces extending from the cervix up into the body, among the *outer* layers of muscular fibres.

If in cancer of the cervix implication of the body could be absolutely excluded, the vaginal method of removal would be the only correct one, without question, but this cannot be done.

In primary cancer of the body, which is not rare, the cancerous process extends, in many cases, in the lymphatics of the round ligaments and ovarian vessels beyond the limits of the uterine tissue. In such cases the broad ligaments can be divided through an abdominal section at a point much farther from the uterus than can be attained by vaginal section.

In the technique of vaginal hysterectomy the lateral section of the vaginal mucous membrane along the bases of the broad ligaments, supplementing the circular incision, will allow section of the uterine vessels and accompanying lymphatics at a point almost one-half inch farther from the uterus than can be attained by the circular incision alone.

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And this may make the difference between recurrence and non-recurrence.

Furthermore, I believe that by clamps the uterus can be crowded outward, and the broad ligaments destroyed at a point farther from the uterus than by ligatures.

I think it will be found that the combination of short clamps applied to the uterine vessels through the vagina, and ligatures to the upper part of the broad ligaments, applied through the abdomen, will prove the best means of removing the largest possible portion of broad ligament with the uterus. The clamps, being within the anterior and posterior layers of the peritoneum, could be entirely shut out of the abdominal cavity by closure of the peritoneal flaps from above.

In fact, every point must be studied and taken advantage of that will aid us in removing the greatest possible amount of peri-uterine tissues with the uterus; and only in this way can we fulfill our whole duty toward our patients.

But, Mr. Chairman, there is another phase of the question that is worthy of serious consideration at our hands, and that is whether the results of entire removal of the appendages relative to the physical and mental life of the woman are such as to deter us from the operation in cases which do not endanger life.

There has been much spoken and written on this subject, but the matter has generally resolved itself into a question of individual judgment and experience; but in the formation of our personal, individual judgment the combined experience of the many should be a large factor.

The results alleged to arise from the total removal of the appendages are:

(a) Loss of the ability to bear children,
(b) Loss of sexual feeling,
(c) Certain problematical physical changes, and
(d) Disturbance of the nervous equilibrium, even to the extent of insanity.

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Under these four heads can be grouped, I think, all changes which have been observed, and by combining the experience of many operators something like definite conclusions should be reached.

The first result mentioned—inability to become pregnant—is, to my mind, the one serious question; the one which should make us all hesitate to remove, totally, appendages concerning which there can be a possibility of doubt as to their future usefulness being restored. But, in deciding these questions, individual judgment must be the final tribunal. In the formation of this judgment, due weight must be given to all factors.

The fact that the woman seeks relief at the risk of life is conclusive evidence of serious suffering. The problem to the gynecologist is, how can that suffering be relieved. If it can be relieved without the sacrifice of the reproductive function, the duty is plain. If not, and the ability to become pregnant has not been entirely abolished by the disease, the problem is more complex. My own belief I can formulate briefly.

If the woman has children, all diseased tissue should be removed so thoroughly as to insure freedom from the former suffering. If she is unmarried, or married and without children, some portion of ovary and tube should be left, as advocated by Dr. Polk, if thereby the possibility of future pregnancy can be retained, and the former suffering greatly relieved, even if there remain a possibility that a future laparotomy may be required for the total removal of the remaining portion of the appendages.

As to the second and third results mentioned, namely, the loss of sexual feeling and certain physical changes, I believe that the total removal of the appendages and the artificial induction of the menopause affects the system in the same way as the normal onset of the menopause, certainly in no greater degree, but probably in a less. That is, that the sexual feeling is not abolished; but that, where lost before by reason of the diseased conditions, it may become restored.

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Whether it becomes gradually destroyed as time elapses has not yet been determined by recorded observations; but enough is known as to that factor to teach us that it should bear no part in influencing our decision as to the removal of the appendages when suffering demands it.

As to physical changes, none occur except generally an increase in body weight. These bugbears held up before the people of the gradual growth of whiskers, and the change to a masculine voice, have no existence except in the imagination.

But the fourth conclusion as to the disturbance of the nervous equilibrium, and the production of insanity, cannot be so lightly put aside. There have been a great many arguments adduced, unsupported by facts, and a great many facts unjustly or wrongfully construed for the sake of establishing an argument.

Let us take the State of Michigan as a basis. There have undoubtedly been a number of cases of insanity following operation for removal of the appendages; but it does not follow, nor can I admit, that the operation shall be considered in all cases the cause of the insanity.

The asylums are filled to their utmost capacity. I do not believe the ratio of women becoming insane after operation to those operated on is any greater than the ratio of insane women in the state to the total number of women. Although, if it be true that the ratio is greater, it is only what would be naturally expected, inasmuch as women who are forced by their sufferings to seek relief by means of a surgical operation have been by that suffering so broken as to their nervous system that insanity might be occasioned by any shock or sudden exciting cause.

In other words, I do not believe that the causative relation of removal of the appendages to insanity has been proven. On the other hand, I do believe that this operation has, in this state, restored to the full use of their reason more, numerically, than have lost their reason from the same cause.

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DISCUSSION OF DR. BOISE'S PAPER.

DR. J. HENRY CARSTENS. I received a notice some time ago requesting me to discuss this paper. The ultimate results in my experience have always been good. In only a very small percentage of cases have I had any trouble. As far as the physical results are concerned, if the operation was perfect, they have always been good, and patients enjoyed the best of health. The mental results have always been the same, that is to say, the tranquility of mind which has been established after an operation is finished and the patient recovered had been wonderful in many cases. To my knowledge not one of my patients has become insane, and I have kept track more or less of a good many hundred cases. I have operated in a number of cases where there was insanity, and the patients have entirely recovered temporarily, but in three or six months would have a relapse, and have finally been relegated to an asylum.

As far as personal beauty is concerned, I have only seen the most beneficial effects in all cases, especially those requiring the removal of the ovaries, tubes, or uterus. The sepsis, or the long continued pain or reflex irritation produced by the various pathological conditions, as a rule made these patients anæmic, with a pinched expression of the face resulting from pain, and a haunted look of the face, caused by the dread of an operation. Their skin has become wrinkled and inelastic as the result of sepsis and disturbance of the digestive organs; and the lack of exercise in the fresh air has turned their hair gray prematurely. I have seen within two or three weeks after an operation, as if by magic, all this disappear; the wrinkled face fill up with fat; the skin become healthy; the eyes will sparkle—yes, it even seemed to me that the hair

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was less gray; and the figure becomes erect, and the step elastic. I have never seen the eunuch-like figure, the loss of voice, the masculine look, the mustache, and so on, about which some of the mossbacks in the profession are always croaking. I have seen such cases where they have never undergone any gynecological operation. I never saw removal of the uterus or of the uterine appendages have any effect in destroying the sexual passion; in fact, as a rule, I think it restores it where it has been lost. This is a question of individuality; each case is different; some women never have any or lose it early; while others are the very opposite even if they never have an operation performed. In the past, when I used the bayonet-like needle and the *en masse* suture, I had abdominal herniæ; I never see them now. Three or four cases of abdominal hysterectomy by the clamp method, performed three or more years ago, have ventral hernia, and since then I have had none except in some rare case of pus tube, causing extensive ulceration of the abdominal walls in the track of the drainage tube.

With the buried animal suture few hernias will occur. Of abdominal fistulae I have had a number, not as many as I saw before abdominal surgery was practiced. Once in a while along the track of the drainage tube I would have an abdominal fistula. The cause was that the silk ligature of the pedicle was infected, and the fistula would never be cured until the silk ligature came out, and the ligature will remain for years. Since I have used animal ligatures I have no more fistulae, because the animal ligature will dissolve and disappear with the discharge, and be followed by healthy granulation which would entirely close the canal. All my abdominal fistulae I have cured by drainage into the vagina except one, and in that case I have utterly failed. Neuralgias caused by pressure of the ligature on the stump I never see, as the temporary squeezing of the nerve by kangaroo tendon ligature ceases when the tendon is absorbed.

In résume, I will say that in my experience gynecological

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operations, be they on the cervix, perineum, or removal of any or all of the reproductive organs, have only a beneficial effect on the mind and on the body, on the physique, and the beauty of the patient, but these remarks refer only to *perfect* operations. Operations which are not complete, or which cannot be completed by the surgeon, or any such cases where an operation is performed for certain symptoms and the diagnosis has been wrong, I must exclude from this category. *Everything depends on a correct diagnosis.* If the pathological conditions for which we operate do not cause the symptoms of which the patient complains, but slight or no improvement will take place; hence we must be very guarded, indeed, and *not promise the patients too much*, unless we are absolutely certain that our diagnosis is correct. Patients will have various symptoms, and they may not be due to the pathological condition, that is, a diseased ovary, a diseased tube, fibroid tumors, and so on; and then if we promise them too much, all of these symptoms may not disappear, and this will bring surgery into bad repute. We have other cases on which we operate where the complications and adhesions are so difficult that it is utterly impossible to remove the whole ovary or the tube; where we are obliged to use part of the ovarian tissue for a button, so that our ligature won't slip; where we are obliged to leave some part of the fallopian tube; and the result will be that these patients will afterwards continue to menstruate for two or three years until this little bit of ovarian stroma, which still remains and functionates, becomes exhausted, and during that period the patient will have recurrent monthly pains for which we operate. They are not cured. They will have, perhaps, besides the ovarian and tubal disease, a small fibroid, and we go to work and remove the tubes and ovaries, finding the fibroid is very hard to get out. As the patient is weak, we hurry up and get through with the operation and trust to the vis medicatrix naturæ. The fibroid will not absorb after the menopause; it gets larger, causes a great amount of disturbance, and the patient is as

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bad after the operation as before, and even worse in some cases. I make it a practice to remove everything absolutely and perfectly. As mentioned by Dr. Boise, in the case of an ovarian tumor, I certainly operate on a young girl and unsex her entirely; but if there is any possible chance to save one ovary and one tube, I would rather run the risk of another operation when I know the whole trouble is limited to one side. We must be guarded in our prognosis. Every week I see cases where practitioners made a wrong diagnosis. Patients come to me because of neurotic troubles of various kinds. They are told by physicians that their ovaries and tubes are diseased, and they want an operation performed. On examination I find no trouble whatever, either with the ovaries or tubes. I make a diagnosis in some of these cases, and in others I cannot. I find it is love sickness or something else, and I tell them they do not need an operation; that they must consult a neurologist and be treated by him. The next thing I hear is that Mrs. Brown has had her ovaries removed. These cases come back just as bad as they ever were before, and when another woman consults us with palpable disease, she is apt to tell us that Mrs. So-and-so was operated upon, but that the operation did not do her a particle of good. These cases bring surgery into bad repute, and we cannot be too careful and guarded in both our prognosis and diagnosis. If we do not know, we had better ascertain before we do anything.

Dr. J. H. Kellogg. I endeavor to look after all my cases of laparotomy. The total number of my cases of ovariotomy in the last six years is 390, excluding hysterectomies and malignant cases. Of these, eight cases, or 2 per cent., died. Of those who recovered, up to August last (1894), 297 cases had reported to me in reply to special inquiries in relation to the following points: (1) The general results of the operation; (2) The effects of the operation upon the menstrual function; (3) The psychic results of the operation as regards

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the sexual functions. The replies obtained are summarized as follows.

General Results of the Operation.—250, or 84 per cent., reported themselves cured of the difficulties for which the operation was performed, and substantially restored to health; 37, or 12 per cent., reported themselves better, but at the time of the report were still more or less invalids; 3, or 1 per cent. of the entire number, were insane for a time after the operation; 8, or $2\frac{1}{2}$ per cent., suffered from irritability of the bladder, which they did not experience before the operation; 6, or 2 per cent., suffered from annoying vaginal catarrh, or senile catarrh, which frequently follows the menopause; 2, or $\frac{2}{3}$ per cent., who were temporarily better after the operation, died of pulmonary tuberculosis a year later; 13, or $4\frac{1}{2}$ per cent, complained of rheumatic pains, stiffness, and in several cases of swelling of the joints, as a new symptom which appeared subsequent to the operation; 10, or $3\frac{1}{2}$ per cent., reported themselves as not improved by the operation, and some considered themselves worse, not having realized the results anticipated.

Effects of the Operation Upon the Menstrual Function.—In 202 cases, 68 per cent., menstruation ceased at once with the operation. In 64 cases, $21\frac{1}{2}$ per cent., the menstrual flow continued either regularly or irregularly, and in some cases more profusely than before the operation, for an average of six months and six days. The longest period reported was four years subsequent to the operation. In 31 cases, $10\frac{1}{3}$ per cent., menstruation had not yet ceased at the time of the report, being continued for a number of months subsequent to the operation, making 96, or 32 per cent., cases in which the menstrual flow did not cease promptly with the operation. It should be mentioned, however, that in 30 cases the menstrual flow ceased within three months following the operation, and in 17 cases within six months following the operation, leaving but 48 cases, or 16 per cent., in which the

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menstrual flow could be said to be long persistent after the operation.

Psychic Effects as Regards the Sexual Functions.—Replying to the inquiry upon this subject, 95 reported as follows. 78, or 82 per cent., no change; 6, or 6.3 per cent., increased sexual desire and excitability; 6, or 6.3 per cent., slightly decreased sexual desire and excitability; 5, or 5.2 per cent., complete loss of sexual feeling. In no case was there any evidence of loss of womanly sentiments or the appearance of any masculine characteristics.

DR. LONGYEAR. I will say in regard to my general results that they have been pretty much as Dr. Kellogg's and those of Dr. Carstens, as represented in their statistics. There is only one point in the paper that I desire to touch upon at this time and that is in regard to the incision being made through the rectus muscle. It does not seem to me to be good practice to do this, for when you are separating the fibers of the muscle you produce more or less traumatism, and you may do a good deal of injury to the muscle, and are apt to break or lacerate some small blood vessels, and thus induce hemorrhage which will form clots and interfere materially with union. It is not as good practice as going through the linea alba. By using the buried suture you insure firm union. If you get a firm union of the *fascia*, you do not care about the other tissues. . Firm union of the *fascia* will certainly prevent hernia. Non-union of this layer is the only cause of hernia; it does not make any difference about the skin, peritoneum, layer of fat, or the musles, but *the fascia must be united.* I do not think tightening of the muscles will make a bit of difference; the hernia will force itself through and separate the muscular fibers if not held by this firm, non-elastic, aponeurotic tissue.

DR. C. HENRI LEONARD, Detroit. I have been asked to say something on this subject. In my own experience the facts are these; I state them frankly. But three of my patients

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have, so far as I know, ever survived any major operation, either made by myself or by my confreres upon them. It is true, I do not make many of these major operations; but still my patients do not die. Two years ago I made the statement that I had signed but a single death certificate in my special line of work, except from cancer, in ten years, and I have not had to do so during these last two years. The relief following these major operations is frequently very limited, besides great physical pain is endured at the time of operation. Now, some of you may say I either do not have anything to do, or that I have a different type of cases; but I say that conservatism is a good plan of treatment. I have my theories about the ultimate results of these major operations. I know there is a better way than the surgeon's knife to deal with lacerated cervices and even most cases of pus tubes, and all the operators in the world would not change that opinion, and that being the case, I do not operate frequently. I do, however, perform paracentesis, either through the abdominal wall, or by making an opening through the vagina to release pus. You call it laparotomy; I do not dignify it by that scientific term. My patients get well, and remain so, some of them for fifteen years afterward. I am sorry I cannot give a larger list of recoveries of patients who have left my hands to have operations performed by one surgeon or another.

DR. CARSTENS. I can show you patients who have recovered after major operations by the hundreds.

W. P. MANTON. Speaking of the physical and mental effects upon patients, I have never had in my practice a case of mental trouble following a laparotomy. I do not know if any of the members have. I have had quite a large experience in operating on insane patients. Without going into details, I will say that I read a paper on the subject two years ago before the Detroit Medical Library Association, and reported a number of cases with results. I have not yet performed an

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operation on an insane patient, even where the mind was almost entirely gone, but that the patient was made better by it. I hesitate to say anything on this subject, because the tendency is, if one advocates operating on this class of patients, that others who may not be similarly situated will accept this as a dictum, and will go ahead and perform operations indiscriminately on all sorts of cases. Last Sunday I was at the asylum, and while there I saw an old patient of mine upon whom I had operated three or four years ago for laceration of the cervix. I saw her some four months ago for a few minutes only. She was then a broken-down, hysterical woman. She needed good food, tonic treatment, and country air. Not satisfied, she went to a physician in Detroit and had her ovaries removed, and was sent to the insane asylum at Pontiac. She does not belong there; she is simply hysterical. She is going to be benefitted by the rest and tonic treatment she will get there. I should not advocate the radical operation that was done in this case, because benefit can be derived from other treatment. In the cases I operated upon in the various asylums, some were ablation of the uterus, and some were trachelorraphies, and I have never had a patient that was not benefitted physically, and in some way mentally as well by the operation.

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VENTRO-FIXATION, OR SUSPENSIO UTERI.

J. J. MULHERON, M. D.,
Detroit.

A large percentage of the local pelvic pain and the general systemic irritation for which women consult the physician is traceable to backward displacements of the uterus. It seems quite incredible to him who has had any considerable amount of experience in the treatment of diseases peculiar to women that there should be any doubt on this question, and yet there are those who insist that the causal relation of such disturbances is largely over-estimated. I believe, however, that any argument on this subject would be quite out of place before this section. I shall assume that it is generally advisable, and often imperative, that backward displacements of the uterus be corrected. The means which have been employed to this end have been numerous, and it is safe to say that up to the present time they have been far from satisfactory. I refer to the use of pessaries, cotton packing, and even the shortening of the round ligaments. I think that most of you who have had experience in the use of these devices will bear me out in this assertion.

We believe that a decided advance was made when the procedure of attaching the uterus to the anterior abdominal wall was introduced. Certainly my experience, not very extensive I admit, in the employment of this procedure has been such as to warrant me in strongly advocating it. The operation was first employed as a secondary procedure in coeliotomy for the removal of the uterine appendages. The deliberate opening of the abdomen, with the express purpose

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of thus attaching the uterus, is of comparatively recent introduction. The operation pre-supposes, of course, that the uterus is freely movable. The breaking up of all adhesions which may operate to keep the organ in malposition, or to interfere with its unobstructed movement on its axis, is, therefore, a necessary preliminary. If possible, such breaking up should be done before the cavity of the abdomen is cut into. This may usually be accomplished by the employment of massage, applications of iodine, and packing with lamb's wool and glycerine tampons. I may say, by the way, that the success of such attempts, intelligently and persistently made, will surprise those who have not tried them. In my experience it is a comparatively rare thing for a uterus, bound down in the position of retroversion, to resist such efforts towards its reposition. I have followed this practice for upwards of twenty years, long indeed before it had the sanction of the later gynecological authorities. It was introduced to me by the late Dr. I. S. Hamilton, of Tecumseh, Mich., who, I think, should be credited as the pioneer in this treatment; in this country, at least. Under his instructions I succeeded in replacing a retroverted uterus, which had been pronounced irremediable by a number of very good men, and under the increased experience which followed my first case I may be permitted to state, without egotism, that I grew to be very successful in the treatment of this class of cases. Unfortunately, however, the uterus which has long occupied a retroverted position, whether bound down by adhesions or not, is not prone to remain in its normal position after having been placed there. As a rule, the pessary introduced for the purpose of such retention requires to be quite constantly worn.

The evils of the prolonged use of the pessary, and the objections to Alexander's operation, have been so frequently pointed out, and are so familiar to all of us, that it is not necessary to recall them. They are so well recognized that any method of treatment which offers an effective substitute

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will be hailed with delight. Suspensio Uteri commends itself both on account of its effectiveness, and its freedom from attending danger which is as great as that attending any of the operations ordinarily held to be safe. The woman having been prepared after the manner requisite for coeliotomy, is placed on her back, and an incision two inches in length is made in the median line, the lower end of the cut being as low down as possible, and yet avoiding the bladder. In cases where there is entire absence of adhesions it is scarcely necessary for the finger to enter the abdominal cavity. The assistant replaces the uterus with the ordinary sound which holds the organ in place. The fundus is then forced into the incision, the impingement of the tip of the sound being detected by the finger of the operator. The edges of the incised peritoneum are caught up on each side by forceps, and the finger is gently introduced into the wound to make sure that no loop of the intestine is apt to be caught in the stitch. With a pair of curved scissors a space of the size of a silver ten cent piece, is denuded from the presenting part of the uterus. A Peaslee needle is then inserted through the true skin, and made to pierce the muscle and the peritoneum. It is then passed to the depth of an eighth of an inch beneath the surface of the fundus. Emerging from the uterine tissue, the point of the needle enters beneath the edge of the peritoneum, on the opposite side from that which it enters, and passing up through the muscular tissues emerges through the true skin. The needle is then threaded with a heavy kangaroo tendon ligature, and being withdrawn, the ligature is left in place. The ligature, being tied, brings the scarified surface of the uterus into close apposition with the peritoneum, and having been introduced in the manner described becomes a buried suture. In ordinary cases the peritoneum will require little further suturing than that which is made by the ligature which passes through the uterus. If more is required, the kangaroo tendon may be employed. Of the various methods of closing the abdominal wound be-

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tween the skin and the peritoneum, I prefer that which employs the interrupted silk worm gut. When these are passed through the skin and muscle, down to but not involving the peritoneum, and neatly tied, they secure coaptation of the structures embraced even to the integument. The wound is then painted with iodoform-collodion solution, appropriate dressings applied, and the woman returned to her bed. The silk worm gut may be removed on the eighth day, the iodoform-collodion solution being previously removed by application of alcohol.

The Trendelenberg posture is valuable in some cases, and particularly in those complicated by adhesions which it is necessary to break up. The opening of the abdomen with the woman in this posture is followed by an immediate retrocession of the intestines, thus at the same time obviating the danger of their being wounded, and freeing the pelvis of their sometimes embarassing presence. I have, however, never considered this posture necessary in case uncomplicated by adhesions.

A number of objections have been urged against the attachment of the uterus to the abdominal wall, but the chief is the possible interference of the fixation with gestation. I cannot speak from my own experience on this point, but the recorded testimony of observers shows the dangers to be overestimated. Certainly the uterus thus attached is less liable to abort than when in retroversion. It must be remembered that the adhesion is not extensive, and, like adhesions between serous membranes elsewhere, is elastic and likely to yield sufficiently to accommodate the pregnant organ.

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DISCUSSION OF DR. MULHERON'S PAPER.

DR. J. HENRY CARSTENS. While I commend the paper, I cannot agree with everything in it. With those cases of retroversion with adhesions, of which the author speaks, we can accomplish excellent results by breaking up the adhesions. We can obtain fairly good results by massage, but they are not thoroughly broken up by it; they are simply stretched, and in a couple of months the uterus is as bad as ever. In cases where there are no adhesions, I find as a rule there is very little trouble. You can manage these cases with a pessary, and in the course of time the uterus will stay in its proper position. In cases with adhesions, I do not think pessaries will do any good, nor do I think we can break up firm adhesions with massage, but it will be necessary for us to make an abdominal section and stitch the uterus in front. Before we do that we break up the adhesions and clear the rectum with our finger. I find there are no adhesions unless there has been some pre-existing tubal or ovarian disease; there has been something that has caused a septic condition there, and inflammation of the pelvic peritoneum. As the result of accident, such as falling off a stepladder, or something like that, the woman dislocates her uterus, also an ovary, sometimes two, sometimes only one. As a rule I find only one ovary dislocated, with a retroverted uterus and tube matted together in one solid mass, and during the menstrual period, when the periodic congestion and swelling of the ovary takes place, there is excruciating pain and suffering on that side. I find one side or the other (generally the left) in that condition, and the only way to effect a cure is to remove the one ovary and diseased tube, and stitch up the uterus in front—stitch the stump of the tube instead of the uterus to

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the lower angle of the wound; that will twist the uterus around a little bit. But in one case which required a secondary operation for salpingitis I found the cord only an inch and a half long, the size of a lead pencil, by which the uterus was attached quite loose and movable, and did not interfere with any function, but was firmly anchored in front. I removed one side, and stitched the stump to the anterior abdominal wall, leaving the other side intact. In my experience the gratefulness of these patients is something remarkable. After suffering for years and years with pain, they are relieved, become strong, and are able to walk around with comfort.

Dr. H. W. Longyear. There are some adhesions in connection with posterior displacements of the uterus that can be broken up by manipulation and packing with wool, and by the use of certain remedies, (among them icthyol I find especially useful), and I have treated some cases of this kind with marked benefit. But, as Dr. Mulheron says, while the uterus is relieved to a great extent, it does not stay in position by itself. It very rarely does that. I find in some cases it takes a long time to get results, but we do get them in that way, where the patient and doctor both exercise the requisite amount of patience and perseverence. If you can fit a pessary, the woman will get on comfortably, provided there is no disease of the appendages, ovaries adherent to the uterus, etc. These cases are common. It is true, as Dr. Carstens says, that in cases of retro-displacement with adhesions the retro-displacement is almost always due to old tubal disease or pelvic peritonitis, and this in turn is due to salpingitis. In some of these cases the disease disappears, but the resultant adhesions remain. I operated on a patient a short time ago in which I expected to find disease of the tubes. The uterus was retro-displaced, immovable. I found no enlargement of the tubes; they were normal. I placed the woman in the Trendelenberg position; there was a normal peritoneum apparently extending straight from the fundus of the uterus back onto the rectum and sacrum. There was

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apparently absolutely perfect continuity of peritoneum; there were no lines of cleavage at all, and I had to cut the peritoneum behind the uterus and dissect it away from the uterus to relieve it. In the same manner I cut away the peritoneum and found the ovaries normal in appearance. The tubes were in their natural position, and not covered in by adhesions, and were normal, except that the fimbriated extremities were not present, and apparently the tube was continuous with the peritoneum on each side of the pelvis; but there was absolutely no disease apparent in them. I did not remove them. After dissecting the uterus up, I stitched it to the parietal peritoneum at the incision. I think this operation of ventral fixation is a very valuable one, but in doing it you have to observe certain rules in regard to the manner in which it is performed. I heard the originator of the operation, Dr. Kelly, of Baltimore, give directions for doing it some time ago, in which he stated that he stitches the fundus of the uterus to the peritoneum only, using the sutures placed just back of the fundus, thus causing the uterus to be held somewhat in anteflexion.

In fastening the fundus and for sewing up the wound I use the buried suture of kangaroo tendon, leaving no suture whatever outside.

Dr. Eugene Boise. I wish to make a few remarks on this subject and to say a word for the Alexander operation. Ventral fixation is adapted to those cases where the uterus or appendages are adherent, and pessaries ought not to be used. The operation of shortening the round and utero-sacral ligaments ought to be done in any case where the uterus and appendages are movable. If a pessary fails to afford temporary relief, there is some other cause for the discomfort than the retrodisplacement, as endometritis, or something of that nature. If endometritis, use the currette. If a lacerated cervix, do a trachelorrhaphy. If the appendages are adherent, never rely on massage or Schultze's method of breaking up adhesions, because I do not think they can be broken up suffi-

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ciently to insure a permanent result. In cases in which the uterus and appendages are movable, shortening the round ligaments is the operation, if it can be supplemented by the shortening of the utero-sacral ligaments. This restores the parts to their normal condition. The highest aim of surgery is to successfully restore abnormal conditions to the normal. The fundus is never thrown backward in a retroversion except the cervix is thrown upward and forward. In my opinion these round ligaments can be shortened, and the operation made a permanent success. I have made the operation a number of times, and have only had one recurrence, and that was where I broke up the adhesions through the rectum by Schultze's method, and restored the uterus permanently by making an Alexander operation. But it was again drawn backward because the adhesions were not fully broken up. Quite recently, in cases where extensive adhesions are present, it has been recommended to open the abdomen, then the inguinal canals, and draw out the round ligaments. It is considered a correct method, and has been recognized by several operators.

If a pessary cures permanently, as remarked by Dr. Carstens, how does it do it? It does it by the irritation it causes posterior to the uterus. The cervix is drawn backward, the pessary sets up irritation in the cul de sac, and these sacro-uterine ligaments are shortened by the adventitious tissue thrown out around them. I do not believe the Alexander operation should be performed in all cases of movable uterus. There are cases of movable retroverted uteri which cause no symptoms—in such, operative interference is not indicated.

Dr. J. Henry Carstens. I do not want to be misunderstood. I did not say that pessaries cured. I consider a pessary a temporary expedient, especially in cases after confinement where the process of involution has not gone on. It is a support to the womb, and along with constitutional treatment the uterus becomes smaller.

I would like to ask Dr. Boise whether the round ligaments

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have anything to do with keeping the uterus in position? You may force these ligaments (by pulling and shortening them) to do a certain amount of work, but you are not producing any physiological condition there. There is an abnormal condition. You may force the ligaments to hold the uterus in position; but a woman with a healthy uterus has no pulling on the ligaments at all. They may be cut off and the uterus would not fall back.

Dr. Boise. The round ligaments are composed of involuntary muscular fiber. They simply exert muscular action, by means of which the uterus is drawn forward when displaced backward, as by distention of the bladder. The involuntary contraction of the muscular fibers draws it forward.

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MENOPAUSAL POLYSARCIA ABDOMINALIS.

WALTER P. MANTON, M. D.,
Detroit.

Among the many phenomena presented at the climateric period there is one which is of particular interest to the abdominal surgeon, in that a perfectly normal and physiological process which takes place in the larger proportion of women at this time is sometimes looked upon as a pathological condition amenable only to surgical interference. I refer to the rapid, often sudden, accumulation of fat in the abdominal parietes.

The great frequency with which this condition is met—according to the much quoted statistics of Tilt fully one-third of all women being thus affected—and the apparent simplicity in differential diagnosis between it and morbid new growths would seem to make mistakes regarding the abdominal enlargement almost impossible; but as patients with fatty abdomens have come to me within the past few years with the diagnosis of "ovarian tumor" made by some physician, I am led to believe the condition is either not sufficiently understood, or that methods of differentiation are often superficially or carelessly applied. It is on this account that I call your attention to apparently so unimportant a subject.

There are only a few pathological states which are at all likely to be confused with fat accumulation in the parieties, true lipomata, desmoid (fibroid) tumors of the abdominal wall, encysted peritonitis, hydatids of the peritoneum, and possibly new growths of the omentum. A little care in physical examination will readily distinguish any one of these

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from diffuse fat accumulation in the belly walls. Women affected with abdominal polysarcia often frighten themselves into the belief that they are the victims of a malignant tumor, and the assurance of the physician that the condition present is a perfectly normal one, devoid of danger, which will gradually disappear as the fat is reabsorbed to be deposited in other portions of the body, will bring with it the greatest mental relief and satisfaction to the patient.

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SECTION ON MEDICINE.

OFFICERS.

J. E CLARK, Detroit, Chairman.
GEORGE DOCK, Ann Arbor, Secretary.

SECRETARY'S MINUTES.

THURSDAY. JUNE 6th, 1895.

2 O'CLOCK P. M.

The subject for discussion was Diphtheria, upon which the following papers were read:

I. Etiology, F. G. Novy, Ann Arbor.
II. Diagnosis, Collins H. Johnston, Grand Rapids.
III. Treatment, General and Medicinal, C. G. Jennings. Detroit.
IV. Treatment, by Serum, C. T. McClintock, Ann Arbor.

After a general discussion of these papers, the Section adjourned until 8:30 A. M. the following day.

FRIDAY, JUNE 7th.

MORNING SESSION—8:30 O'CLOCK.

Papers were read and discussed as follows:

I. The Public Care of Epileptics by Colonization, Wm. M. Edwards, Kalamazoo.

II. Some Forms of Trophic Neuroses, with an Illustration, W. J. Herdman, Ann Arbor.

III. A Case of Insanity During Pregnancy, Wm. G. Henry, Detroit.

IV. Friedrich's Ataxia, with Cases, Sidney I. Small, Saginaw.

On motion of Dr. Shurly the thanks of the Section were extended to Dr. Small for his interesting paper, and also to the patients who kindly presented themselves for exhibition.

The following paper was read by title:

V. Nuclein in Tuberculosis, with Reports of Cases, Herbert M. King, Grand Rapids.

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AFTERNOON SESSION—2:30 O'CLOCK.

The election of officers resulted as follows:

Chairman—David F. Stone, Bay City.
Secretary—Andrew P. Biddle, Detroit.
Orator—Herbert M. King, Grand Rapids.

The following papers were read and discussed:

I. A case of Multiple Sarcoma, W. F. Breakey, Ann Arbor.

II. Salicylic Acid in Pleurisy and Other Diseases with Serous Effusion, George Dock, Ann Arbor.

III. Rheumatism. Its Pathology and Modern Treatment, E. S. Pettyjohn, Alma.

IV. The Nervous Symptoms of Gout, David Inglis, Detroit.

V. Personal Experiences Regarding Altitude in Organic Cardiac Disease, Hugh McColl, Lapeer.

Adjourned.

GEORGE DOCK,
Secretary.

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ETIOLOGY OF DIPHTHERIA.

FREDERICK G. NOVY, M. D.
Ann Arbor.

Among the infectious diseases of men there is scarcely one which has passed through as interesting and as remarkable a history as diphtheria. Numerous investigators have attempted, at quite an early date, to throw light upon the cause of this dreadful disease. Their efforts, however, were largely unsuccessful, owing to the extreme difficulties which presented themselves at that early period in the study of bacterial affections. In the normal individual, the mouth harbors a large number of micro-organisms, and in diseases of the mouth or throat the number and kind of micro-organisms is still further increased. No wonder, then, that this abundant and luxuriant flora of the mouth served to divert and nonplus the early pioneers in this important study.

One thing, however, was certain, namely, that the cause of diphtheria was a microbe—a living organism. It is only too well known that diphtheria is a communicable disease, that it is transmissable from one person to another. This fact can be explained in but one way, and that is that a living organism is transmitted from one person to another. The attribute of life is essential to the cause of an infectious disease, and diphtheria certainly occupies a front rank in this class.

Our present knowledge regarding the microbic cause of diphtheria may be said to begin in 1883, when Klebs found by microscopic examination of a number of cases of diphtheria the bacillus which today is known throughout the world as the cause of diphtheria. During the following year Lœffler

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succeeded in isolating this bacillus in absolutely pure cultures. He was therefore enabled to describe minutely its morphological, tinctorial, cultural, and biological properties, and by so doing furnished a firm, permanent, reliable foundation on which subsequent workers could build with that confidence which has brought about one of the greatest achievements in medicine.

Lœffler confirmed the observations of Klebs regarding the presence of this bacillus in the false membranes of this disease. In twenty-seven diphtheritic membranes which he examined, he found the bacillus present in about one-half. On the other hand, in some of the sections examined the bacillus could not be found, a failure due, undoubtedly, as he himself points out in 1890, to the fact that some of the early cases studied were not typical cases of diphtheria. Between 1884 and 1890, he examined twenty-one fresh cases of diphtheria, and in every one of these the characteristic bacillus was demonstrated. Inoculations with pure cultures of this bacillus into the trachea of rabbits, guinea-pigs, chickens, and doves produced a croupous-like condition, due to the formation of coarse, false membranes. Similar results were obtained by vaginal inoculations in guinea-pigs, and also by application to the conjunctiva and pharynx. When injected subcutaneously into guinea-pigs, a hemorrhagic œdema with grayish white exudate formed. The fact that the bacilli were always found in guinea-pigs at the point of inoculation, and not within the organs, led Lœffler to conclude that they produced a powerful poison which was absorbed and carried throughout the body. This view was subsequently established by Lœffler's own researches in 1887 and 1888 on the poisonous products of the bacillus, and above all by the classical researches of Roux and Yersin in 1888, and of Brieger and Frænkel in 1890.

Notwithstanding the frequent presence of this bacillus in the disease, and the diphtheria-like results obtained by inoculating animals with pure cultures of the bacillus, Lœffler,

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with characteristic modesty and reserve, with the true spirit of a scientific investigator, refrained from designating it as the cause of diphtheria. This hesitation was due to several reasons. In the first place, he had found the same bacillus, identical morphologically and physiologically, in the mouth of a healthy child. Again, the typical diphtheritic paralysis observed in man were not reproduced in animals; also, applied to the uninjured mucous membranes of animals the cultures had no effect. Furthermore, as stated above, the bacillus was not always found in the sections of membranes examined; and lastly, the bacilli showed a different arrangement in the false membranes from animals compared with those from man. In view of these facts Lœffler came to the conclusion that, while the bacillus was probably the cause of diphtheria, more investigations however would be necessary to definitely prove this relationship.

The doubt expressed by Lœffler as to the relation of the bacillus to diphtheria unquestionably contributed to discourage other investigators, for during the next three years practically no further studies were made. In his second paper, in 1887, Lœffler pointed out the constant presence of the germ in ten cases, and at the same time discovered the pseudo-diphtheria bacillus, which differed from the bacillus first studied, in addition to slight morphological and cultural differences, in the absence of any pathogenic power with reference to guinea-pigs. In the following year, Hoffman, whose untimely and tragic death will ever remain in the memory of bacteriologists, studied the occurrence of the Klebs-Lœffler bacillus in diphtheria. He succeeded in finding this bacillus in six out of eight cases, but he failed to establish any specific relation between the bacillus and the disease for much the same reasons that led Lœffler to question the correctness of his own interpretation. Thus Hoffman met with the non-pathogenic pseudo-diphtheria bacillus in diphtheritic membranes, and also in twenty-six out of forty-five cases of diseased, but not diphtheritic, mucous membranes. He likewise demonstrated

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a marked variation in the virulence of the Lœffler bacillus obtained from different cases and from old cultures. Furthermore, the virulent bacillus was found in a case of measles, and in one individual out of eleven where no throat complications existed.

In December, 1888, Roux & Yersin published their first memorial on diphtheria, in which they were able to take the definite stand that the Klebs-Lœffler bacillus was the specific cause of diphtheria. They considered themselves justified in taking this position because (1) they found the Lœffler bacillus present in each one of fifteen cases of diphtheria examined; (2) by means of pure cultures of the bacillus they reproduced false membranes in animals, just as Lœffler had done; (3) they succeeded, with pure cultures, in producing paralyses in animals similar to the post-diphtheritic paralyses in man; (4) they demonstrated that the bacillus gave rise to poisonous products which, when injected into animals, produced either death or paralysis, according to the dose.

This publication of Roux and Yersin attracted widespread attention, and led numerous workers to take up the subject of the etiology of diphtheria. The results of these investigations was the confirmation of Roux & Yersin's conclusions, and with this achievement once accomplished, it became possible for Behring to enter definitely upon that research which has given, and will give, invaluable benefits to mankind.

Let us consider now, in a somewhat general way, the evidence which has been brought forward during the past ten years regarding the etiology of diphtheria. In the first place, in order that a micro-organism shall be considered as the cause of a disease, the requirement is exacted that it shall be found in every case of that disease. This so-called first rule of Koch, framed at a very early period in the history of the etiology of infectious diseases, assumes some things which, in the light of our present knowledge of the role of micro-organisms in infection, cannot be disregarded. Thus, that which for clinical or anatomical reasons is described as a definite

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disease may in reality be far from being an entirety. A rational or natural classification in general biological science is based upon natural, intimate relationship, and not upon mere appearance or form. The divisions of diseases by the clinician, based on mere clinical observation, or by the pathological anatomist, based on anatomical relations, are largely classifications of convenience, and in no wise bring out that relation which is closest and most intimate to the disease—that of the cause. It does not require much reasoning to show that that which is clinically or anatomically designated as a disease may have only one cause, or may have several distinct causes. In the latter case, what was called a disease becomes, through the study of its etiology, a group of diseases. The old typhoid fever has passed through such a history, and we may say in advance that diphtheria has recently experienced a similar development.

We may ask ourselves: Is the Lœffler bacillus present in every case of diphtheria? Is the first rule of Koch demonstrated? From the earliest investigations of Klebs in 1883 and of Lœffler in 1884 until the present day it is evident that the Lœffler bacillus is present in a very large proportion of the cases of clinical diphtheria. In the following table an effort is made to compile all available reports of bacteriological examinations, from outside the United States, of diphtheria made in ten cases or more, showing the number of cases examined and the number of times the Lœffler bacillus was found.

	Number of cases examined.	Number of times Lœffler's bacillus found.
Sorensen, 1886	10	7
Roux and Yersin, 1888	15	15
Kolisko and Paltauf, 1889	About 50	In nearly all
Ortmann, 1889	16	15
Barnike, 1889	20	18

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	Number of cases examined.	Number of times Lœffler's bacillus found.
Babes 1890	42	42
Brieger and Fraenkel, 1890	22	22
Beck, 1890	53	52
D'Espine, 1890	15	11
Escherich, 1890	22	20
Klein, 1890	22	22
Lœffler, 1890	21	21
Roux and Yersin, 1890	80	61
Spronck, 1890	13	13
Morel, 1891	86	66
Pletzer, 1891	12	7
Concetti, 1892	21	16
Heubner, 1892	113	77
Martin, 1892	200	137
Sakharoff, 1892	19	13
Tangl, 1892	18	18
Baginsky, 1892	154	118
Hoppe Seyler, 1892	37	23
Iansen, 1893	83	63
Lœffler and Struebing, 1894	100	75
Plant, 1894	80	22
Ritter, 1894	225	225
Phillip-Baginsky, 1894	333	332
Chaillon and Martin, 1894	198	155
Roux, Chaillon and Martin, 1894	448	320
Feer, 1894	44	38
Kossell, 1894	117	117
Katz, 1894	128	128
Hilbert, 1894	11	11
Bernheim, 1894	12	11
Bergmann, 1894	46	46
Schmorl, 1894	10	7
Fraenkel, 1895	About 100	In all but few
Totals	2846	23448=82.4 %

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From this table it will be seen that in 2846 cases examined by European workers the Lœffler bacillus was met with 2344 times, or 82.4 per cent. This result is somewhat higher than that obtained by the American investigators, who, it will be observed, largely through the efficient support of the Board of Health of the city of New York, examined about twice as many cases as given in the preceding table.

	Number of cases examined.	Number of times Lœffler's bacillus found.	Per cent.
Park, 1892	140	54	.....
Park, 1893	104	73	.....
Park and Beebe, 1894	4795	3255	.....
Morse, 1894	301	217	
Totals	5340	3599	67.5 %

If we now combine the results obtained by American and European workers we will have cases in which the Lœffler bacillus is found 5943 times, or 72.6 of the cases.

These two tables contain the results obtained by a large number of investigators in different laboratories and in different countries, employing at times methods more or less different. In many instances the cases examined are described as suspicious, or very suspicious. The degree of suspicion, as Welch has pointed out, is a relative one depending on the physician, for where one physician considers a case to be highly suspicious, another may regard it as very doubtful. Accurate, positive, clinical diagnosis of diphtheria in many of the above cases is lacking, and the low percentage which these statistics furnish may in part, at least, be explained by this dilution with suspicious cases For purposes of diagnosis, of course, the examination of suspicious cases is extremely valuable, but in statistics intended to show the frequency of the Lœffler bacillus in diphtheria they can have but one effect, that of lowering the percentage. This is true in the two tables already given, and in the third table, which serves as an excellent companion with the work of the American bacteriologists,

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giving the results obtained by the French investigators of the Pasteur Institute at Paris. These results, it will be observed, are obtained by men working in the same laboratory, employing the same methods of research, and studying cases in one and the same hospital. These figures are already included in the first table. It will be seen from this table that the Lœffler bacillus was found in 73 per cent., which coincides with the percentage frequency in all cases examined. Bearing in mind that these French bacteriologists are all skilled workers, it will be evident that this percentage is low, because of errors in diagnosis by the internes of the hospital.

	Number of cases examined.	Number of times Lœffler's bacillus found.	Per cent.
Roux and Yersin, 1888	15	15	.....
Roux and Yersin, 1890	80	61	.....
Martin, 1892	200	137	.....
Sakharoff, 1892	19	13	.....
Chaillon and Martin, 1894	198	155	.....
Roux, Chaillon and Martin, 1894	448	320	.....
Totals	960	701	73.0 %

The available statistics then show that 73 per cent. of all clinical and suspicious cases of diphtheria contains the Lœffler bacillus. That this percentage will be higher where great care is taken in diagnosis, excluding suspicious or doubtful cases, is evident. Furthermore, there are other conditions which bear upon the detection of a given micro-organism in disease. And all of these factors tend to lower the percentage. Thus, in the first place, the accuracy and skill of the individual in detecting the Lœffler bacillus is to be considered. The more experience one has in this kind of work, the more easily and frequently will the bacillus be found. Again, much will depend on the method of staining, and on the method of cultivation. Certain stains are preferable to others, and the same is true of the medium on which the germ grows. Again, failure of detection may result from conditions over which the

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bacteriologist has no control. Thus, the material which is removed from the throat may not be from that portion where the Lœffler bacillus is present. Mere touching or scraping of the surface of the membrane does not necessarily carry with it the bacillus, which may however be present in the membrane. Again, the Lœffler bacillus may be present, but is outgrown by the large number of foreign germs that may be present. In such cases the detection of the germ becomes a mere accident.

Further, the bacillus may be inhibited or even prevented in its growth on culture media by a previous application of antiseptics to the throat. That such cases may and do occur has been shown recently by Plant.

There is reason, therefore, to believe that the percentage of cases of diphtheria in which the Lœffler bacillus exists is greater than that given in the preceding statistics. With proper care in diagnosis, and in removal of portions of membrane from the throat, supplemented by skilled investigators using reliable, well tried methods, the percentage of cases where the Lœffler bacillus is found may rise to a marked extent as seen from the following table. These figures are already included in the first table. They are all obtained during the past year (1894) by German workers. Plant's results are omitted because most of his cases were diagnosed as "suspicious or very suspicious."

	Number of cases examined.	Number of times Lœffler's bacillus found.	Per cent.
Philip (Baginsky), 1894	333	332	.....
Bernheim	12	11	.....
Hilbert	11	11	.....
Katz	128	128	.....
Kossell	117	117	.....
Lœffler and Struebing	100	75	.....
Ritter	225	225	.....
Bergmann	46	46	.....
Fraenkel	About 100	In all but few	.....
Totals	973	945	97 2 %

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In connection with the presence of the Lœffler bacillus in diphtheria it should be emphasized, contrary to Hansemann, that there are cases in which the bacillus is present in perfectly pure culture unaccompanied by any other germ. This is especially true if the examination is made at an early stage, as has been demonstrated by Martin, by Chaillon and Martin, by Frænkel, and by others. Subsequently, as the disease progresses, other bacteria, especially cocci, make their appearance, and not only may outnumber but even suppress the Lœffler bacillus.

These bacteriological studies with reference to the frequency of the Lœffler bacillus in diphtheria demonstrate clearly that the bacillus is present in more than the seventy-five per cent. of all cases of real clinical diphtheria, as stated by Lœffler, and conceded even by Hansemann. There remains, however, still a sufficiently large percentage of clinical diphtherias in which the Lœffler bacillus is unquestionably absent. In these cases, which in many respects are undistinguishable, clinically, from those in which the Lœffler bacilli are present, other micro-organisms are found. These forms of diphtheria may be due to several other micro-organisms, as has been shown by Roux, Chaillon, and Martin in their researches. They cannot be said to be proven to be causes of such diphtherias; but, nevertheless, there is much reason to believe that such is the case.

The French bacteriologists divide anginas into two groups; first, diphtheritic anginas, those in which the Lœffler bacillus is present; and second, non-diphtheritic anginas, those in which it is absent, and which, as stated, are undoubtedly due to other micro-organisms, above all to the cocci. Thus, in 112 anginas examined by Martin, sixty-nine were found to be diphtheritic and forty-three non-diphtheritic. The most common organism found in the latter group, in twenty-five cases, was coccus. The next most common organism was the streptococcus found in eight cases; and in a few others

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the staphylococcus albus, aureus, and other cocci predominated.

In a second series by Chaillon and Martin ninety-nine anginas were examined, and seventy were found diphtheritic, and twenty-nine non-diphtheritic. Of the latter, eleven had the Conall coccus of Brison, eleven had streptococci, and four had staphylococci. In the 448 cases examined last year by Roux, Chaillon, and Martin, 128 were found to be non-diphtheritic.

The study of croup by these same observers has likewise demonstrated that all croups are not diphtheritic. They may likewise be divided into diphtheritic and non-diphtheritic croups. The latter, as in the case of anginas, may be due to the Brison coccus, streptococcus, staphylococcus, and other organisms. As seen from the subjoined table the number of non-diphtheritic croups is much less—nearly one-half—than the non-diphtheritic anginas.

	Number of cases.	Diphtheritic.	Non-diphtheritic.	Per cent.
ANGINAS—Martin	112	69	43	.....
Chaillon and Martin	99	70	29	.....
Totals	211	139	72	34.1 %
CROUPS—Martin	88	68	20	.....
Chaillon and Martin	99	85	14	.....
Totals	187	153	34	18.2 %

The bacteriological examinations show clearly, therefore, that diphtheria as it is commonly understood may be due to several causes. In other words, that we have a group of diseases which clinically cannot be distinguished, but which nevertheless are etiologically different. It has been proposed to designate those cases in which the Lœffler bacillus is present as true diphtheria, or bacillar diphtheria, or diphtheria for short; while these cases in which it is not present are spoken

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of as false or pseudo-diphtheria, coccus diphtheria, or diphtheroid.

Inasmuch as those cases in which the Lœffler bacillus is present are most numerous and most fatal, this form of diphtheria, above all, requires our attention. What evidence do we possess then that the Lœffler bacillus is actually the cause of those cases of diphtheria in which it occurs?

In order to prove this relationship it is necessary to obtain the bacillus in perfectly pure cultures, free from all other micro-organisms. This can readily be accomplished, thus satisfying the second rule of Koch. The pure cultures thus obtained, when inoculated into susceptible animals, must now produce the same disease with all its symptoms and pathological changes, and in the animal thus artificially infected the germ is to be found distributed the same as in the natural case. This severe requirement is rarely complied with for the reason that the animals which are used for experimentation, while susceptible to the action of the germ, can scarcely be expected to reproduce all the details of the disease as it exists in man. Thus the bacillus of glanders, which has been shown to be the cause of glanders in the horse, producing in that animal typical glanders, will, if inoculated into a field mouse, produce death, but without the slightest resemblance to the disease in the horse. In other animals, as the guinea-pig, the bacillus does produce effects which are strikingly like those of glanders. Other instances might be cited to show that, when experimenting with bacteria on animals other than those in which the disease naturally occurs, variations are met with, and must be expected. What then is the effect of the Lœffler bacillus when inoculated into susceptible animals?

Fortunately, the results obtained by such inoculations are so striking, and bear so great a resemblance to the natural disease in man, as to leave no doubt in the minds of those who are at all familiar with the work that has been done in this direction. The production of experimental diphtheria in

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animals by Lœffler, and above all by Roux and Yersin, are in themselves sufficient to show that the Lœffler bacillus is the cause of diphtheria.

Guinea-pigs, pigeons, and rabbits are most susceptible to the Lœffler bacillus. Subcutaneous injections of a virulent culture in these animals almost invariably produce death in twenty-four to forty-eight hours. A more or less extended gelatinous œdema forms at the point of inoculation; a grayish pseudo-membrane forms, and the glands are enlarged. Serous effusions in the pleura are common in the guinea-pig, but very rare in rabbits. On the other hand, the liver in the guinea-pig is apparently unaffected, whereas in the rabbit fatty degeneration takes place.

The inoculations on the mucous surfaces are especially characteristic. In order to succeed the mucous membrane must first be slightly injured, otherwise infection does not result. Inoculations in the pharynx, trachea, conjunctiva, and vulva of animals are followed by the formation of false membranes, general intoxication, and death. In tracheal inoculations the false membranes may spread, as Frænkel especially points out, covering the entire walls of the air passage even as far as the large bronchi. The tissues are œdematous and the glands swollen. A more striking resemblance to the natural disease can hardly be expected in animals that are not naturally susceptible to the disease.

The post-diphtheritic paralyses which are observed in men have also been reproduced in animals by Roux and Yersin, Brieger and Frænkel, and others. These paralyses are especially well marked in pigeons, rabbits, and dogs which have been inoculated with a quantity of the germ insufficient to kill in a short time. In from six days to two or three weeks after the inoculation typical paralysis develops, and the animal either recovers or eventually dies. The production of false membranes on mucous surfaces, and the subsequent paralysis in animals, completes the resemblance to the natural disease to

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such an extent as to establish the specific relation of the Lœffler bacillus to diphtheria.

Not only can pure cultures of the bacillus cause the paralysis in animals, but the chemical products of the bacillus can accomplish the same result. The researches of Roux and Yersin on the poison produced by the diphtheria bacillus mark a new era in the study of diphtheria. The filtered germ-free cultures of the Lœffler bacillus when injected into rabbits, in doses not sufficient to kill in a short time, produce typical paralysis. That similar poisons are elaborated in the body of diphtheria patients has been demonstrated by these investigators and by others. Thus the spleen and urine of a child dead of diphtheria was shown to contain the same or similar poisons which, when injected into a rabbit, was followed by a prolonged paralysis and death.

The effect of pure culture of the Lœffler bacillus, and of its chemical products on animals, may be said to establish its relation to diphtheria. There are, however, two other facts which still further emphasize this relation. In the first place, the high mortality of those cases of diphtheria in which the Lœffler bacillus is present is in striking contrast with the mortality of those cases in which it is absent. This is no accident, much less a myth, as Hansemann would believe. In the 80 cases studied by Roux and Yersin in 1890, the Lœffler bacillus was present in 61 cases and absent in 19. All of these 19 recovered, whereas, of the 61 cases in which the bacillus was present, 30 died. Again, of the 200 cases examined by Martin in 1892, the Lœffler bacillus was found in 137 cases and was absent in 63 cases. Of 55 non-diphtheritic anginas and croup, 7 died; 4 of these however became infected with the Lœffler bacillus in the hospital subsequent to a tracheotomy, and one died of broncho-pneumonia. Of 137 diphtheritic anginas and croup, 72 died.

The study of the 198 cases presented by Chaillon and Martin in 1894 developes the same remarkable difference in the mortality of the two groups. Thus in the 198 cases of angina

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and croup mentioned, the Lœffler bacillus was found 155 times and was absent in 43 cases. Of the 43 non-diphtheritic cases, 4 died, 3 of these as a result of subsequent infection in the hospital with the Lœffler bacillus. Of the 155 cases where the Lœffler bacillus was present, 83 died. Again, of the 448 cases reported on by Roux and his co-workers last year, treated with serum, 109 died. 320 of these cases had the Lœffler bacillus and gave a mortality of 98. 128 did not have the Lœffler bacillus and gave a mortality of 11.

These figures are brought together in the following table, and furnish an interesting subject for study.

	Number of cases with Lœffler's bacillus.	Deaths.	Per cent.	Number of cases without Lœffler's bacillus.	Deaths.	Per cent.
Roux and Yersin	61	30	49.2	19	0	0.0
Martin	137	72	52.6	55	7	12.7
Chaillon and Martin	155	83	53.5	43	4	9.3
Average	353	185	52.4	117	11	9.4
ANTITOXIC SERUM						
Roux, Chaillon and Martin	300	78	26.0	128	11	8.6

The bacteriological examination of clinical diphtheria, therefore, shows clearly that the mortality in those cases where the Lœffler bacillus is present is about 50 per cent. On the other hand, those forms which are clinically indistinguishable from the preceding, but do not contain the Lœffler bacillus, possess a mortality of about 10 per cent., which, however, includes those which died of subsequent infection with the Lœffler bacillus. Deducting these, assuming that all would recover subsequent infections, the mortality would sink to less than 4 per cent. Certainly no more remarkable evidence of the etiological relation of the Lœffler bacillus to diphtheria can be

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presented than that shown from the study of the relative mortalities.

As a final proof of the relation of the Lœffler bacillus to diphtheria, we will mention in a general way the results obtained from the use of the anti-toxine serum. First of all, it is desirable to emphasize the experimental fact that the serum of animals rendered artificially immune to the diphtheria bacillus or its products will protect absolutely animals against many times the fatal dose of diphtheria bacillus or its poison.

This fact is as well established by direct experimentation on animals as the chemical fact that sodium hydrate and hydrochloric acid neutralize each other. Secondly, it will be remembered that in diphtheria in which the Lœffler bacillus is present the same as those formed in pure cultures poisons are produced and can be found in the organs, as has been done by Roux, Yersin, and others.

The anti-toxine serum which protects animals against infection with the Lœffler bacillus must therefore likewise protect the person afflicted with diphtheria due to the Lœffler bacillus. That it actually does protect is abundantly demonstrated by treatment of diphtheria during the past year. I will refrain from considering the results of treatment with anti-toxine serum, inasmuch as that subject falls within the scope of another paper. To emphasize the statement already made, it will be sufficient to present one or two instances. Of the 300 cases treated with anti-toxic serum and reported on by Roux at Budapest last September, only 78 died, giving a mortality of 26 per cent. These results were obtained in the same hospital where Chaillon and Martin established the fact that in diphtheria in which the Lœffler bacillus is present the mortality is above 50 per cent. Furthermore, showing the specific action of the anti-toxine serum on the Lœffler bacillus and its products, it will be seen from results already cited that in 128 treated non-diptheritic cases, the mortality was 8.6 per cent. against 9.4 per cent. in non-treated cases. The serum is therefore without any effect in cases where the

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Lœffler bacillus is not present; and in those cases in which it was present the mortality was reduced by one-half, that is, 25 per cent. were cured. Since then the mortality record has been lowered considerably. Thus in 128 cases of diphtheria containing the Lœffler bacillus treated by Katz, only 17 died, giving a mortality of 13.2 per cent. 117 cases treated by Kossel gave 13 deaths or a mortality of 11.1 per cent.

Because the protection against the Lœffler bacillus is absolute in animals it must not be expected that similar results will be obtained in man. A certain mortality will necessarily exist owing to conditions over which the physician can have no control. In experiments on animals three factors are involved; the animal body, the Lœffler bacillus or its poison, and the antitoxic serum. It is well known from experiments that an animal cannot be saved when the duration of the disease or of the intoxication has been too long. Irreparable injury has already been done. The same result must therefore be expected in the human object where the disease has progressed beyond a certain point.

Furthermore, in the human subject, in addition to the three factors mentioned, another one is to be considered, and that is the association of the Lœffler bacillus with other microorganisms. It is today a well established fact in bacteriology that a given pathogenic germ may be favored or retarded in its action by the presence of other organisms. In diphtheria both of these conditions are not infrequently met with. Roux and Yersin have shown that the virulence of the Lœffler bacillus with respect to animals is increased by associating it with the streptococcus of erysipelas. The statistics furnished by Chaillon and Martin are especially valuable in this regard. In their researches, as already stated, the cases of clinical diphtheria were divided on the strength of the bacteriological examination into diphtheritic and non-diphtheritic. The diphtheritic anginas and croups are sub-divided into (1) pure diphtheritic forms where the Lœffler bacillus is present in a pure or almost pure condition; (2) diphtheritic forms

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with microbic associations. The latter associations may vary; at one time it is a small diplococcus, the coccus of Brison, at another time a streptococcus, at another time a staphylococcus. In a few words, the same germs which are found in non-diphtheritic forms may be associated with the Lœffler bacillus in real diphtheria.

The following table compiled from the results obtained by Martin in 1892, and Chaillon and Martin in 1894, demonstrate clearly the effect of microbic associations. All these cases contained the Lœffler bacillus. Those designated as "pure diphtheria" contain the Lœffler bacillus in almost pure culture, the number of foreign germs being very small, if any. In those cases designated as coccus anginas or croup, the predominating foreign germ, besides the Lœffler bacillus, is a small diplococcus. It will be observed that the percentage mortality in this group is much less than in the group of pure diphtheritic affections. In other words, the presence of a large number of cocci of this kind tends to counteract the effect of the Lœffler bacillus. In the third group are included those cases in which, in addition to the Lœffler bacillus, streptococci or staphylococci predominate. Here it will be noticed that the percentage mortality is much greater than in the pure diphtheritic forms. The streptococci and staphylococci therefore either increase the pathogenic powers of the Lœffler bacillus directly, or by their own products produce additional intoxication and therefore increased mortality.

Anginas.	No. of cases.	No. of deaths.	Per cent.	Croups.	No. of cases.	No. of deaths.	Per cent.	Per cent. of both Anginas and Croups.
Pure Diphtheritic	96	38	40	Pure diphtheritic.....	67	44	66	50.3
Diphtheritic with coccus..	14	1	7	Diphtheritic with coccus.	19	5	26	18.2
Diphtheritic with strepto- or staphylococci	29	26	90	Diphtheritic with strepto- or staphylococci	25	19	76	83.3

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There are a number of other interesting points regarding the Lœffler bacillus, such as the presence of the germ in the throats of healthy children; its occurrence in fibrinous rhinitis and in wound diphtheria; its persistence in the throat after recovery from diphtheria; its relation to the non-virulent pseudo-diphtheria bacillus, etc. These facts, however, have but little significance so far as the proof of the relation of the Lœffler bacillus to diphtheria, and I shall therefore avoid burdening you with their discussion.

Summarizing briefly the leading points brought out in this paper, it will be seen that *First*—The Lœffler bacillus is present in much more than 73 per cent. of real, clinical diphtheria; *Second*—That pure cultures introduced into animals reproduce false membranes, paralysis, and other ill effects observed in diphtheria; *Third*—That the chemical products of the bacillus produce paralysis, diarrhœas, intoxication, and death, completing the resemblance to the natural disease; *Fourth*—That the mortality of those cases in which the Lœffler bacillus is present is vastly greater than those in which it is absent; *Fifth*—That the antitoxic serum, which possesses a specific action toward the Lœffler bacillus and its poison, reduces the mortality in those cases in which the Lœffler bacillus is present, and is without effect in those where it is absent. It is the overwhelming evidence which fully justifies us in stating that whenever the Lœffler bacillus is found in a disease it is diphtheria. It was with genuine pleasure that Lœffler could make the definite announcement at Budapesth last year, ten years after his pioneer work of 1884, that "The cause of diphtheria is the diphtheria bacillus."

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DIPHTHERIA: SYMPTOMS AND DIAGNOSIS.

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Diphtheria is an acute, infectious disease, characterized by local manifestations in the throat, and caused by the action of the Klebs-Lœffler bacillus. It attacks especially the tonsils, palate, and pharynx, but often invades the nose and larynx. Under this name have hitherto been included etiologically distinct affections. In general, however, it may be said that the cases produced by the Klebs-Lœffler bacillus possess clinical, pathological, and bacteriological characteristics which serve to distinguish them from other forms of the disease which in the past have been called diphtheria. And now, since the advent of antitoxine, it is still more desirable to avoid using the word diphtheria to designate other diseases than that produced by the Klebs-Lœffler bacillus. As Kossel says, we should give to the word the old meaning assigned to it by Bretonneau, who applied the name diphtheria to a specific infectious disease, and not to a special form of anatomical change.

It is now admitted by most authorities that diphtheria is primarily a local affection, although the first symptoms noted are often of a general nature, as fever, headache, malaise, etc. In some cases, however, typical throat symptoms are present at the outset, such as pain in swallowing, redness and swelling of the mucous membrane of the tonsils and palatine arches, and white punctate deposits upon the tonsils, which may soon coalesce and cover the entire throat. More or less tenderness and swelling of the submaxillary glands is always

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present. The local processes may vary in degree from simple catarrhal redness to the formation of a thick membrane with extensive necrosis of the underlying mucosa.

Schmidt divides the local manifestations of diphtheria into three classes.

The *first* presents a great similarity to follicular tonsillitis. In the mouths of the follicles are seen pea-sized or larger, white, or yellowish white deposits, which remain isolated throughout the attack. This exudate disappears on the second or third day, and the patient is soon well, with or without treatment, with the exception of a pronounced general weakness which often remains a few days longer. The process is almost always bilateral.

The *second* form is that of membrane formation. This is produced by union of the isolated deposits of the first class, or, in severe cases, appears primarily. In addition to the patches on the tonsils, we find extensions to the faucial pillars and uvula. Less frequently the posterior pharyngeal wall and the mucous membrane of the mouth are involved. The neighboring patches of pseudo-membrane may unite and become very thick.

The *third* or gangrenous form has the same mode of origin as the first or second form, and is attended by pronounced swelling of the neck and dark discoloration of the membrane. The submaxillary glands may be enormously enlarged. In case the patient recovers, necrosis of the mucous membrane of the throat takes place.

On the other hand, the local symptoms of diphtheria may be slight. The patient may complain but little of the throat, yet the fever is high, the tongue dry, the intellect dull, and delirium or convulsions may set in. The symptoms partake more of a general nature, and collapse with paralysis of the muscles of deglutition may appear in from seven to nine days. The fetor of the breath upon which so much emphasis has long been placed may be entirely absent. In other cases it may be very pronounced, especially when a gangrenous con-

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dition of the throat is present. As the result of the absorption of septic matter the temperature may be high. But it may be low, and is sometimes subnormal.

The respiratory organs are frequently involved, more especially the nose. In the latter case, a yellow or reddish serous discharge is present. The nose becomes occluded, sleep is interfered with, and the tongue becomes dry. The involvement of the larynx varies with the epidemic. Complete loss of voice may be due to pseudo-membrane between the vocal bands, or to subglottic swelling. An important symptom of laryngeal involvement is dyspnœa, which at first may be intermittent, but later becomes constant. The extension of the pseudo-membrane to the bronchial tubes is shown by accelerated breathing and a peculiar, metallic character of the respiratory sounds (Schurmayer). Pneumonia may result from extension of the membrane into the alveoli, or from aspiration of bronchial secretions. When the larynx is involved, the cough has a characteristic, croupy tone.

Another complication of diphtheria is myocarditis, which may end in death, or in fatty degeneration of the myocardium and recovery. Leyden considers its cause to be the presence of bacilli in the muscles of the heart. But this assumption, Schurmayer says, is not necessary. Myocarditis may follow other poisonous processes, and there is no reason for supposing it cannot result from absorption of the toxines of the Klebs-Lœffler bacillus. Schmidt thinks it may be due to the excessive fever sometimes present, or to diminished oxidation of the blood caused by stenosis of the respiratory passages.

The symptoms of implication of the heart are a pulse of 160 or over in adults, and 120 in children, and change of the pulse-rate upon slight movements of the body. Baginski designates as further symptoms decrease in tension of the pulse, a small, weak pulse, arrythmia, and symptoms of general congestion of the body, with cyanosis and coolness of the extremities. At the same time the appetite completely dis-

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appears, and vomiting with precordial distress and pain may set in. Auscultation may show feeble heart sounds, disappearance of the first sound, occasionally reduplication of the sounds, and gallop rythm. The liver swells and becomes very hard.

The stomach and intestines are but seldom disturbed in diphtheria by the bacilli themselves; but their functions are frequently deranged by the fever, and by the toxines of the disease.

Disease of the kidneys is recognized by the presence of albumin in the urine. Whether this is due to the influence of the fever or to the toxines is not determined. The latter is most probable. Parenchymatous nephritis is attended by vomiting and diminution of the urinary secretion.

One of the most peculiar sequels of diphtheria is paralysis of the peripheral nerves in various parts of the body. Even in light cases this sometimes appears before the patient has recovered from the attack itself. The muscles most frequently involved are those of the soft palate and deglutition. The muscles of the larynx and eyes are rarely involved. Loss of the patellar reflex is very common, and a severe ataxia may be present in the lower extremities. Sensation in the paralyzed parts may be absent or perverted.

The more severe the primary disease in the pharynx is, the earlier appears diphtheritic paralysis. It is usually accompanied by albuminuria, or nephritis with casts. When the disease in the pharynx is less severe, and not of a gangrenous or septic form, the paralysis sets in later and slower, but is apt to become extensive, and to be especially dangerous on account of the tendency to involve the diaphragm. The latter is said to be more frequent than is generally supposed. It is indicated by aphonia, a subdued, hoarse cough, difficulty in expectoration, dyspnœa, thoracic respiration, and sunken abdomen. With the onset of bronchitis and pneumonia the dyspnœa increases, and may be followed by asphyxia and sudden death.

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Hemiplegia may occur as a sequel of diphtheria, though rarely, it not having been present once in thirty cases of diphtheritic paralysis reported by Baginski.

The course of diphtheria is very variable. The local process in the throat may be slight, the patches may disappear, and the process end in complete recovery in a few days. Or such an amount of toxines may be absorbed from the throat as to cause speedy death. The more prolonged the disease, the more unfavorable is its prognosis. The difference in its course depends upon the variableness in the quantity and virulence of the diphtheritic bacilli; upon the presence of other bacteria, either pathogenic or saprophytic; and upon conditions of individual predisposition which at present are not well understood. Putrefactive processes in the diseased mucous membrane in the nose and throat influences the course of the disease unfavorably by increasing the virulence of the Klebs-Lœffler bacillus, and by the production of toxines whose absorption adds to the already existing septic processes.

According to Schmidt the prognosis depends principally upon the epidemic. In some epidemics ninety per cent. of the cases have died. A malignant epidemic may suddenly change to a mild one from unknown causes, and, on the other hand, Aub tells of an epidemic in his practice which had long been very mild, but which suddenly assumed a most malignant character. The prognosis is most unfavorable in children under three years of age, yet the condition of the patient when taken ill, as well as the possibility of administering suitable nourishment throughout the disease, are important factors in determining the final result.

Siegel-Stuttgart, whose opinion was based upon a close observation of three hundred cases of diphtheria, makes a favorable prognosis

(1) When the disease is slow in origin, development, and spread, and proceeds from a follicular angina;

(2) When the membrane has a white or grayish-white color;

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(3) When, upon removing the membrane, deep injury to the underlying mucous membrane does not result;

(4) When the uvula remains free;

(5) When the pseudo-membrane is cast off in large flakes, be it quickly or slowly;

(6) When the discharge from the nose, if invaded, is thin and watery;

(7) When the glandular enlargement arises slowly, and remains unilateral;

(8) When, in a severe case, the enlarged glands are diminishing in size;

His prognosis is unfavorable

(1) When the pseudo-membrane appears in a few hours and spreads rapidly;

(2) When the membrane is yellow in color, and coated with dirty, greasy debris;

(3) When removal of the pseudo-membrane produces considerable injury to the mucosa beneath it;

(4) When the uvula is involved;

(5) When rapid return of the membrane follows its removal;

(6) When the nasal discharge is fetid, thick, and purulent;

(7) When the glandular swelling appears suddenly, and increases rapidly;

(8) When great fetor of the breath is present;

(9) When there is great hoarseness;

(10) When stenosis of the larynx occurs;

(11) When during or after a tracheotomy pseudo-membrane must be removed;

The prognosis is always unfavorable when diphtheria is secondary to any other disease.

The diphtheritic process is a special form of necrotic inflammation. When a mucous membrane is inflamed, and a pseudo-membrane consisting of fibrin, leucocytes, etc., forms upon its surface, it is called a croupous inflammation. The mucosa itself remains intact; its epithelium is not abraded.

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A diphtheritic inflammation, on the other hand, is one in which the fibrinous exudate is poured out, not only *upon* the surface of the mucous membrane, but also *within* it. The rapid coagulation of this exudate interferes with the circulation in the mucous membrane to such an extent that portions of it become necrotic. A croupous inflammation, as Schurmayer says, bears the same relation to a diphtheritic inflammation, as surface suppuration does to purulent infiltration. A croupous membrane is a thin pellicle of a bluish-white color, in contradistinction to the thick, yellowish, velvety appearance of the diphtheritic membrane. The edge of a croupous membrane can be easily separated from the parts beneath, leaving them intact, while a diphtheritic membrane cannot be removed without the rupture of blood vessels or the tearing of tissue.

On rare occasions, however, we meet with cases of fibrinous exudate which seem to possess the characteristics of both processes, membranes which are on the dividing line between croup and diphtheria, and clinically it is sometimes impossible to differentiate the pseudo-membrane of the Klebs-Lœffler bacillus from that produced by streptococci, staphylococci, or pneumococci. In these cases we must make a bacteriological examination, or treat them as diphtheria. These croupous anginæ, as a rule, are isolated cases, run a rapid and favorable course under any mode of treatment, and are never followed by paralysis.

Baginski reports ninety-three cases which from ocular inspection of the throat, and from clinical symptoms, were diagnosed as diphtheria. Within twenty-four hours Klebs-Lœffler bacilli were found in sixty-eight of the cases by the aid of cultures. Of these, forty per cent. died. Of the remaining twenty-five cases in which the specific bacillus was not found, only one died, and that from a complicating disease. On the other hand, it would be improper to exclude diphtheria in every case in which the specific bacilli are not found upon the first examination, for they may easily be over-

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looked. Feer found Klebs-Lœffler bacilli in each of thirty-eight cases of diphtheria examined bacteriologically, and Roth found them in twenty-one out of twenty-two cases. The negative result in the one case was afterwards shown to have been due to an accident. But that the bacilli may occasionally be difficult to find is shown by a case reported by Baginski. Relying upon the negative result of a bacteriological examination, a suspected case was placed in the medical ward. Eight days later, on account of a suspicious eruption, the child was transferred to the scarlet fever pavilion. Two days later she developed diphtheritic patches on the tonsils and pharynx, and an extensive epidemic of diphtheria followed in the medical and scarlet fever wards.

One source of error lies in the fact that the bacilli are not equally numerous in all cases. In diphtheritic angina, with fever and swelling of the glands of the neck, the specific organisms are much less numerous than in cases with membrane formation. These cases are by no means uncommon, and during an epidemic of diphtheria all cases of catarrhal angina in exposed persons should be isolated until diphtheria is excluded.

As a rule, however, I have experienced but little difficulty in finding the specific bacilli, and if after repeated examinations they are not found, we cannot consider a case to be diphtheria. In these non-diphtheritic sore throats with the formation of pseudo-membrane we find streptococci, staphylococci, or pneumococci. Fear reports six cases which were not to be distinguished from diphtheria by the symptoms, in which he found streptococci in two and diplococci in four.

I think the so-called pseudo-diphtheritic bacillus can be eliminated from consideration in our bacteriological work. Roux and Yersin have proven that it is practically identical with the Klebs-Lœffler bacillus, although possessing some minor points of difference. Morphologically it cannot be distinguished from the true bacillus. The principal reason for calling it a pseudo-bacillus is that it lacks virulence and

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has been found in the throats of healthy children. But virulent as well as non-virulent bacilli have been found in the throats of healthy children. Bacilli bred from diphtheritic membrane show different degrees of virulence. Frænkel has shown that in severe cases of diphtheria non-virulent bacilli exist side by side with the most virulent. Moreover, one can be changed into the other in artificial cultures, and visa versa. It is said that the pseudo-bacillus will not turn bouillon acid; the same is true of those non-virulent Klebs-Lœffler bacilli. Hence, for diagnostic purposes, these bacilli should be considered true diphtheritic germs which, if planted upon suitable soil, may give rise to the most severe forms of diphtheria.

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THE SERUM TREATMENT OF DIPHTHERIA.

CHAS. T. McCLINTOCK, M. D.,
Ann Arbor.

There can be no reasonable doubt that the larger part of the ill-effects of diphtheria are due to the soluble poisons (toxines) formed by or during the growth of the germs of the disease. The paralyses, the albuminuria, the necrosis in the various organs can all be produced at will with these poisons. Here is a diphtheria toxine. This was made by inoculating a flask of alkaline beef tea with a virulent culture of the diphtheria germ. This germ was obtained in December last from a child in Harper Hospital, Detroit. After the flask had been in the incubator, at the body temperature, for several weeks, the germs were killed by the addition of carbolic acid. The beef tea, or as we now call it, toxine, was filtered, first through paper and then through porcelain. The latter removes all the germs. On testing this, we find that one-tenth c. c., or a large drop, is sufficient to kill a half-grown guinea pig within thirty-six hours. Had we cared to study this, as has been done over and over again, we would have given a smaller dose, one sufficient to kill the animal in five or six days. Then had we studied this animal clinically, we would find all the essential phenomena noticed in a fatal case of the disease in a child. We would have the fever, more or less albuminuria, the paralysis, and on section we would find the necrosis.

From such studies, and the like is not true of this disease alone, there is but one conclusion—the toxine is the cause of the fever, the paralysis, the necrosis, the death. I need only mention that when the system is weakened by this poison, it

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is often preyed on by the pus germs, streptococci, etc., and that these may hasten and modify the uncomplicated disease. This poison, the diphtheria toxine, is produced by the germs of the disease which are generally confined to the upper air passages. The poison is absorbed, and circulating throughout the body produces its harmful effects, it may be, in every organ.

The above being true, it follows that when we have a natural recovery from the disease, the body must in some way dispose of or destroy this poison, and the thought is at once suggested that, knowing the cause of the disease, it may be possible to find an antidote, an antitoxine, a something which when injected into the body may destroy or so aid the cells of the body that they can destroy this poison. Such a substance we have in the antitoxic serum of Behring and Roux. And here I must say that it was not a happy thought, not a revelation, not a happening, that led Behring to antitoxine. Ever since Pasteur's work in 1880, away back in the ancient history of bacteriology, we have been approaching antitoxine; a fact here, a theory there, step by step, scores of observers aiding in the work, until at last this worker, placing together all that had been done before him, saw how it might be completed. It had been shown (1) that the disease was due to a toxine circulating in the blood and lymph; (2) that the animal body had more or less power to neutralize, destroy, or dispose of this toxine; (3) that this power varied with the age and species of animal, an older animal or one of a certain species having much more resisting power; (4) by appropriate treatment this poison-destroying or antitoxic power could be increased; (5) that this power could be borrowed by taking the blood or blood serum of the resistant animal, and loaned to the one with less resistance. These experiments on animals having shown the possibilities in the work, Behring began his work of perfecting the methods. Before it could be applied to the cure of diphtheria in the human being the poison-destroying or antitoxic power of the blood in the ani-

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mal used must be enormously increased, so that a small part of its blood serum would be able to neutralize or destroy all the poison produced in an ordinary case of the disease. Again, an animal must be used whose blood serum, when introduced into the human circulation, would produce little or no ill effects. Again, methods of preserving the serum must be discovered, so that it could be sent wherever needed. Methods for measuring its worth, its poison-destroying or antitoxic power, must be devised. These difficulties, Behring asserts, were one by one overcome. Various animals were experimented on—rabbits, sheep, goats, cattle, and horses. It may be interesting to note that a satisfactory antitoxine was worked out for tetanus, not diphtheria. But possibly on account of the infrequency of the disease, together with the fact that almost irreparable damage is done before it can be recognized clinically, and probably still more to the fact that the news was too good to believe, but little attention was given by the profession at large to these results. Not until after the reading of Roux's paper before the International Congress of Hygiene, held in Buda-Pesth September last, was any very general interest aroused in the subject. Since then the medical journals, and even the daily press, have been filled with the subject.

I am appointed to-day to summarize for you, If I can, the results of the serum treatment of diphtheria.

The young science bacteriology has claimed so much, demanded so much of our attention, and asked to remake so much of our belief and practice that when she puts forward a new claim for recognition, a claim that in all the history of curative medicine has no parallel, many hesitate and say: "Once I was young, but now I am old; never have I known or seen such things. I do not believe."

Let us see. This, now, is a question of facts. It has ceased to be a question of opinion. It is no longer what you or I believe. It is, what are the facts?

With over ten thousand cases treated with this remedy—

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used by careful, critical, and often fault-finding men,—probably eighty per cent. of these cases being reported from hospitals, often the diagnosis made by one man, the treatment given by another, and the report made by still another, the larger part of the diagnoses being confirmed by disinterested bacteriologists; with these conditions, I repeat, it is not a question of opinion whether this remedy is, or is not, a success.

Now the question, what are the results? I do not believe it necessary or appropriate to burden you with the reading of long columns of statistics. I may say that my work has been such as to require me to keep watch of these reports. I have looked with some care over the reports of the leading medical journals in this country, England, Germany and France. It is well within bounds to say that an average of all the reports made shows a reduction in mortality of over one-half.

The comparative estimates of treatment with serum and treatment by other means come largely from the hospitals. For the most part the death rate with the serum treatment is compared with that immediately preceding its use. It it noteworthy that in several cases when the serum was not to be had, or from some cause there was an interruption in its use, *i. e.*, up to a certain date the ordinary treatment, then serum, then the usual treatment, and then again the serum, in every case that I have noticed, where the serum treatment was interrupted, the death rate rose to the old figures. Virchow reports such an instance, and although his remarks have been widely quoted, I shall repeat them. He says: "Treatment by diphtheria antitoxine was begun last March in the Kaiser and Kaiserin Friedrichs Hospital. In June and July nearly all diphtheria cases were treated with the serum. The results were as follows: in eight weeks sixty-three cases were treated with a mortality of less than 13 per cent. Suddenly the supply of serum ceased, as, unfortunately, the very horses from which the serum was taken died. The old methods of diphtheria treatment had again to be resorted to, and

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the results were in the next seven weeks one hundred and nine cases treated with fifty-five deaths, a mortality of over 50 per cent. This sad increase in the mortality induced the hospital to return to the serum. Immediately there was a change. In the next six weeks, eighty-four cases were treated with a mortality of less than 15 per cent. The total figures he gives are as follows: five hundred and thirty-three cases were treated; three hundred and three with the serum, with a death rate of 13.2 per cent.; two hundred and thirty without serum, with a death rate of 47.8 per cent." Virchow continued, that in view of the results, he held it to be the duty of every doctor to use the serum. All theoretical considerations, he added, must give way to the brute force of these figures. Further, he says that even if disagreeable by-effects were proved to occur here and there, they were not sufficient to dissuade him from continuing the treatment.

Roux reports that in one Paris hospital the mortality for four years was 51.71 per cent. In the six months since antitoxine was used 448 cases gave 24 per cent. mortality, and during the same six months, in another hospital in the same city where serum was not used, 60 per cent. died.

I could, if needed, cite a number of reports fully as favorable as these. I wish you to note that these reports effectually answer the statement that has been made, that diphtheria has been a very mild disease the past year, since the advent of serum-therapy, and yet in Virchow's report the mortality with the old treatment was 47.8 per cent. In the Trousseau Hospital in Paris, 60 per cent.

	Cases.	Albuminuria. Per cent.	Nephritis. (Clinical.) Per cent.	Nephritis. (P. M.) Per cent.	Deaths. Per cent.
Without serum.....	933	42.00	25.78	16.31	43.2
With serum..... ...	525	40.95	12.57	15.80	15.8

I want to call your attention to one table. This is taken from a very recent report or book of 336 pages on the serum

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treatment of diphtheria, by Dr. Baginsky, Professor of Diseases of Children in the University of Berlin, and Director of the Royal Hospital for Children in Berlin. This is one of the largest and best equipped children's hospitals in the world. Baginsky discusses at length the influence of the serum treatment on the complications and sequelæ of diphtheria. In his opinion the injection of serum does not increase the frequency of nephritis. Cardiac collapse occurred in 10.9 per cent. of those treated without serum, and in 5.69 per cent. of those treated with it. He finds little difference in regard to the frequency of diphtherial paralysis, but such difference as there was is in favor of the serum treatment, the percentages being 6.8 without, and 5.14 with the serum.

One more set of figures and I am through with statistics. Dr. Foster, of Washington, in February last tabulated the reports of 7,185 cases collected from all sources. Of these, 4,445 were treated without antitoxine, with a mortality of 45.56 per cent.; 2,740 cases were treated with serum, with a mortality of 18.54 per cent. Of the cases treated with antitoxine, there was not a single death when the treatment was given in the first day of the disease. When it was begun on the second day, the mortality was 2.83 per cent.; begun on the third day, the death rate was 9.99 per cent.; on the fourth, 20 per cent.; on the fifth, 33.33; after the fifth day, 41.38.

These figures seem to establish Behring's prediction that the mortality will not exceed 5 per cent. if the treatment is begun within forty-eight hours after the attack.

It would not be fair to you, gentlemen, if I did not remind you that there have been a few men who have questioned the efficacy of the serum treatment. It was in reply to an attack made by his own assistant, who denied the efficacy of the serum, that Virchow made the statement I have already quoted. This attitude of Virchow is the more noteworthy, since, as you are doubtless aware, he has been for years the severest critic, the most persistent fault-finder and "doubting Thomas" that the bacteriologists have had to face. But even

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Virchow was disarmed and forced to champion the serum therapy, as he says, "by the brute force of these figures." In this country there have been two adverse reports made in regard to this treatment. One of these was by Dr. Winters, of New York. He made a sweeping challenge of every claim made for serum-therapy, attacked the statistics, and alleged a number of serious after-effects due to the antitoxine. Dr. Winters' opinions were the outcome of his observations in the Willard Parker Hospital. At this distance we can only judge of the facts from the statements made. This report of Dr. Winters was made to the New York Academy of Medicine. In the reports of the meeting, it does not appear that Dr. Winters had a single supporter; on the other hand, Dr. Somerset, who had been connected with the hospital for the past sixteen months, virtually contradicted every conclusion drawn by Dr. Winters. Dr. Biggs showed that over and above every question of opinion was the fact that since the introduction of anti-toxine in Willard Parker Hospital, the mortality had decreased over ten per cent. He concluded by saying that, "Dr. Winters had shown from the beginning of the anti-toxine treatment in the hospital profound distrust of the method," and then declared that, so far as he knew, there was not a single distinguished clinician, pathologist, or bacteriologist in Europe who had not accepted the new treatment of diphtheria as the most important advance in therapeutics in modern times.

The other adverse report comes from Assistant-Surgeon Cordeiro, of the United States Navy.

If there were need and time for such, for every such adverse report I could show you a hundred from men of as wide experience and with broader training, the finding being, as stated before, a reduction of at least 50 per cent. in the death rate, with no increase in the after effects of the disease.

In judging of these statistics I want to ask your attention to one point that has not yet received the consideration it deserves. In the statistics of the treatment of diphtheria

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under the old methods it is to be remembered that in nearly all cases the diagnosis was made from the clinical symptoms; while in the larger part of those reported with serum treatment the diagnosis has been confirmed by bacteriologic examination, and those cases which did not show the germs of diphtheria were not included in the reports,—that is to say, speaking generally the statistics for serum treatment refer to diphtheria, while those for the older methods refer to diphtheria and those diphtheroid conditions which are so often indistinguishable, clinically, from the true disease. That such cases often pass for diphtheria is well shown in the results of the examinations made in the Willard Parker Hospital in New York. These cases were first diagnosed by the health officers; they were then sent to the hospital, and the diagnosis confirmed by the physicians in charge; and yet subsequent bacteriologic examination in these cases showed that from thirty to fifty per cent. were not diphtheria, but maladies of a non-infectious character. During the last six months I have made a bacteriologic study of a number of cases that were called diphtheria; a part of these cases were in private practice, a part from Harper Hospital, Detroit. In less than half of all the cases examined was I able to find the germs of diphtheria. Now, if these diphtheroid cases, cases in which the mortality is much lower than in the true disease, could be excluded from the statistics given for the old methods, as they have very largely been from those given for the serum treatment, we would find a far greater difference in the figures.

The after effects of antitoxine,—urticaria and erythema in the neighborhood of the locality of the injection—are rather frequent. Widespread urticaria occurs. Aronson says that these rashes only occur when a new serum is used; that if the serum is kept for some time none of these effects are to be found. These rashes have occurred much oftener when large doses of a weak serum have been used. Occasionally neuralgic pains have been noticed, particularly in the legs. This

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may go further, and we have swollen, painful joints, and occasionally paralysis.

Dr. Paquin, of St. Louis, who has used the serum of immunized horses for the treatment of tuberculosis, tells me that he has occasionally had these symptoms in some of his patients. A New York observer, who used the serum from an untreated healthy mule, reported symptoms practically as above. These symptoms, it seems to me, are justly referred to the serum. For the most part the rashes are transitory, and, save for the itching, are of no importance. The graver ill effects are fortunately rare.

A number of workers are endeavoring to separate the active principle from the serum, and it is a reasonable hope that this will soon be accomplished. It is to be remembered that antitoxine has no restorative power. It is only what the name indicates, a poison neutralizing or destroying agent. If this poison has been at work long enough to damage the cells of the kidney, or paralyze the nerves of the leg, antitoxine will not repair them or restore their functions.

If we give an experimental animal 1 milligram of antitoxine and then give it ten times the fatal dose of diphtheria poison or toxine, this will more surely protect it from the effects of the poison than if we give it a thousand times as much antitoxine twenty-four hours after giving the poison.

In tetanus the dose of antitoxine necessary to save an animal, when given some time after the poison, is more than a million times as large as that which will protect it when given before the poison. So in treatment the clinical evidence goes to show that one drop of the serum given the first day of the disease is of as much value as hundreds of times this amount given on the fifth day.

It is not to be forgotten that for the most part antitoxine has been made and used by unskilled hands, and yet see the results.

In conclusion, it is possible that these figures and these men are all wrong; but if they are right, curative medicine has never before seen such results.

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DISCUSSION OF THE PRECEDING PAPERS ON DIPHTHERIA.

DR. V. C. VAUGHAN, Ann Arbor. As a member of the Michigan State Medical Society, and as a resident practitioner of Michigan, I am very proud of the four papers that have been read. I have heard papers read in all kinds of societies, and in several different countries of the world, and I am sure I never heard a subject more fully, thoroughly, and ably discussed than the subject of diphtheria has been discussed here this afternoon. I am glad we have in our profession, and in our society, men who can handle the subject as these men have done. All the papers have been most excellent, and I do not think there is very much to add.

I would like to ask Dr. Jennings if he has had any experience with the Lœffler mixture in the local treatment of diphtheria. I have used it altogether in the last three or four months so far as I have treated diphtheria locally, and I think it is the best thing I have ever used. I may say, however, the few cases I have seen during that time have been mild cases. We have at the hygienic labaratory—I say we,—Drs. McClintock and Novy have done most of the work; they have tested samples of antitoxine that has been offered for sale in the state of Michigan, and some of the samples which were offered early last fall were not of a high protective value. These were some of the samples we used when antitoxine was first tried in this country, which is probably one cause of the failures which some have had. Even medical men and women are not free from the desire to see the miraculous done, and, of course, if we treat three bad cases of diphtheria with antitoxine and lose them, we must not be governed by so limited an experience. We must take into

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consideration the experiences which others have had. I think that when such men as Behring, and Roux, and Virchow, and Baginsky, and others give their experience covering so many cases, that there must be something in it. They are skilled men. They are men who are not likely to be mistaken, and they are all honorable men. So that I think whatever they say you may rely upon largely. As I stated a moment ago, I don't think there is very much to add to the subject.

DR. C. B. BURR, Flint. I have been delighted with the papers; and in respect to the paper of Dr. McClintock I must say it has been the most helpful and encouraging medical paper I ever listened to. With results such as these, it can no longer be said of medicine, as has often been said in the past, that it has made no advance; that while surgery has gone on with wonderful progress, there has been no advance in medicine. I feel that with such a showing as this there is a bright future before us.

DR. W. C. WRIGHT, Unionville. Having passed through several epidemics, at least we called them so, although I was unable to receive any bacteriological examinations to prove their genuineness, and having received some instructions from an old gentleman as to the treatment of diphtheria, I have adopted a somewhat novel treatment. In the first epidemic we lost twelve cases; four of them I lost after discarding the novel treatment; and since that time, by readopting it, I have lost no cases of diphtheria, although the practitioners of this and the adjoining town have lost many cases, having had paralysis and all the resulting sequences of diphtheria. Judging from their results I did not hesitate to doubt that they were true and genuine cases of diphtheria, for the sequel of nearly all the cases of one physician during one epidemic was paralysis. My treatment as given to me was the use simply of common turpentine. Not as we ordinarily give it by any means. I started at first with ten, fifteen, twenty, or even

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thirty drop doses. I found afterwards that a child eight or ten or twelve years old would stand from one to two teaspoonfuls every two hours, and I have yet to find a case of kidney trouble due to turpentine where I had diphtheria. I have excluded all cases that had any appearance of being doubtful, and out of twenty-one cases I can safely say that in twenty-four hours time fifteen cases were entirely free from any traces of diphtheria whatever. In one case which continued four days, the fever went down immediately on the administration of five teaspoonful doses of turpentine, and continued down two days. The whole posterior nares, pharynx, palatine arches, and uvula were completely covered. Afterwards, on the return of the fever, by the administration of five teaspoonful doses, one every hour, the temperature dropped to normal and the membrane entirely disappeared. Now, this has not failed in fifteen cases out of twenty-one to remove the membrane entirely in twenty-four hours, and of the six remaining cases I have not had one that continued over four days. This is an old treatment; you will find it in Sajou's annual for 1888. It is a treatment that has been adopted at different times by different persons throughout the country, but on account of not understanding the quantity of the dose it has been discarded because of bad results. Now, one question more with regard to the use of turpentine, what are you going to do if you get trouble with the kidneys? Give phosphorus in minute doses. And I would ask you, if you try this, to publish the failures. I think you will not find any kidney troubles due to the administration of turpentine. I have proved this several times in giving turpentine for other troubles. Now as to another question. We have received from the State Board of Health a special report relative to communicable diseases, asking us to burn sulphur in disinfecting houses, giving us directions as to how many pounds to burn according to the size of the room. We have a small school house in our town, and last winter diphtheria broke out in the school several times, and I have seen the school officers car-

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rying over at different times twenty-five pound packages of sulphur to burn. They tried their utmost to carry out the letter of the law as advocated by the State Board of Health. I was not health officer at the time. The heather officer became discouraged and resigned. Another physician of the town was a member of the village council, and he could not take the position by law, and they asked me, and I told them if they would follow my instructions I would dispose of diphtheria in one day. And I did not let them burn a pound of sulphur. I ordered every bit of furniture about the schoolroom to be wiped with a cloth dampened with turpentine. It was effective, and the Health Board paid me ten dollars, and that was the end of diphtheria in our town. [Laughter.] We lost three patients there. We had several cases of paralysis, and, judging from the symptomology outside of the microscopical examination, I do not doubt but that we had diphtheria. Now what is the use of all this burning of sulphur? Twenty-five pounds in a small schoolhouse would not dispose of it, when a little tupentine put on a cloth would dispose of it entirely.

Dr. Herbert M. King, Grand Rapids. I have listened with a very great deal of interest and, I am sure, profit to the able papers and discussions on diphtheria this afternoon, particularly to that part of the program which had to do with the treatment by serum injections.

In Grand Rapids several of us have had personal experience in the use of antitoxine, since early January of the present year.

While our results have been universally flattering, we have met with considerable criticism based upon theoretical grounds at the hands of those in our local society who for one reason or another are prejudiced against its employment.

Such criticism, or I might better say skepticism on the part of colleagues naturally has a certain reactionary effect upon our own views in the matter. And I confess that I have waited with impatience for just such an article as this which

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Dr. McClintock has delivered. And naturally it is with satisfaction that I have listened to the expressions of sentiments regarding this specific treatment which my little experience has already led me to entertain.

I should like to ask Dr. McClintock if he knows whether there is an age limit to the potency of antitoxine, and if so what is it.

DR. MCCLINTOCK. I would say in reply to that question that our experience has not covered a sufficient range to enable us to determine that. Aronson says, and he is a rival of the Behring factory, in Germany, that antitoxine should not be used which has not been kept six or eight months. On the other hand, followers of the Behring school use it at once. Certainly, it rarely loses its powers. In a dry state antitoxine keeps several years, but in the serum it gradually loses its power. We simply cannot say.

DR. GEORGE HOWELL, Tecumseh. There is one point in relation to the diagnosis of diphtheria of which I would like to speak. Some years ago, when it was first reported that diphtheria was due to a bacillus, there came to my town from a neighboring town a woman and child sick with diphtheria. The little child recovered, but there immediately followed twenty-seven cases of diphtheria, eight of which died; so I guess there can be no question whatever but that it was diphtheria. Now in that epidemic the secretion from the nose was acid, the urine was acid, the perspiration was acid, the tears were acid; all the secretions were acid; something that I had never observed before. In the township adjoining the one in which I practiced it was reported that there were two hundred cases of diphtheria during two years of time. Of those, sixty died. Fifteen cases came under my observation. In that epidemic I found the same thing to be true, that the tears, the saliva, the urine, and all the secretions were acid. Whether it is true in all cases or not, I do not know, but it so happened in these two epidemics. Now, one thing in relation to the solubility of the membrane. Acids will destroy

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it; nitric acid will destroy it; hydrochloric acid will destroy it; but those acids do not dissolve the membrane. It will dissolve very readily in lime water, but very much more readily in the lye of wood ashes. So that in the treatment of some cases of diphtheria I have used the alkalies as a wash to the throat, and thereby think I have rendered the membrane less in amount, and that it disappears more rapidly. Whether there is anything in the treatment or not I do not know. But the point in relation to acid in the secretions I would like to know the opinions of the members upon.

DR. J. E. CLARK, Detroit. I have for some time been very much interested in the serum treatment of diphtheria, and I wish to here cite an occasion in my practice where antitoxin was administered. It was the 24th of May, and since that time I have been very anxious to learn the results of the experiment, but until this afternoon I have not had an opportunity to secure the information. I am pleased to see, however, that there is a gentlemen present who is informed on the subject, and I propose to ask him to supply the information and explain results.

The case, which I saw as stated, I found on arriving at the house did not belong to my clientele, but was one of those cases where a physician is employed for so much a year; they could not obtain their physician, and so I responded. It was a very urgent case in a place not very sanitary. A child about three years of age appeared to be in about the last stage of membranous diphtheria, and stenosis was very considerable, and had advanced with exceeding rapidity. I was called within twenty-four hours of the first appearance of the symptoms, and it struck me that this would be a grand opportunity to use the serum under the most favorable conditions. I at once obtained seven hundred units of Mulford & Co.'s, Philadelphia, manufacture. At 9:30 I injected seven hundred units of the serum. I called to see the child about an hour afterwards; he did not seem to be better, but appeared to be getting worse. I remembered then that it was claimed

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in similar cases it was necessary to inject large amounts, or at least it would do no harm, so about twelve o'clock Dr. Irvine and myself procured another bottle and injected the whole amount. However, having other work to do, it was nearly two o'clock when I returned and called upon the patient. I met the mother before entering the house and asked her, "How is the patient?" She answered, "a great deal better, in fact so much so that she did not think my services were any longer required." I thought this was a wonderful result of antitoxine treatment, and I thought to myself I will report this to the State Medical Society. I was congratulating the mother upon the result of the new treatment, when she said, "I have had a tube put in the child's throat." I said, "what!" She said, "Well, you didn't give us much encouragement, and after you left the house our doctor came in, and he said there was no chance for the child unless he were operated upon." I have a good deal of confidence in his opinion myself in this case, for I felt that nothing but the operation would save the child's life. The mother continued: "He advised us to have the child operated upon; we did so, and now have the tube in his throat, and he is going to get well." I did not see the child. I have not heard the result. That was on the 24th of May, and now I would like to ask Dr. Jennings. who is present, to explain the result of that operation. (Laughter.) If that child has recovered, I claim it is due to antitoxine; while if it has not recovered, it is because of the operation. I presume Dr. Jennings will claim vice versa. (Laughter.)

Dr. Jennings, Detroit. I have heard the history of the case so delightfully related to you by our chairman, which was before unknown to me. It is only necessary to state, however, that under the benign influence of the antitoxine the child recovered. I lay as much to the antitoxine in this case as to the intubation. I didn't know much about the case; I ran off to Washington the next night, but was told the injection had been made. The child was moribund when the

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operation was done, and had not yet recovered from the long stenosis when I left it. This result is the rule in my own observation. With the antitoxine such patients will recover very frequently, while without it the intubation is too often futile. It improves the chances of the child to be treated in the scientific manner that was done by my predecessor.

DR. NOVY. There is one point I would like to bring out in connection with the paper of Dr. Johnston, and that is the bacteriological diagnosis. In my paper I have given the results of the examination of diphtheritic throats for the diphtheria bacillus. It is, therefore, desirable to explain somewhat the method itself, and to see just what is done in those cases. I do not expect that every physician is going to carry out the method in detail; that of course is left to those specially drilled and equipped for such work. But the preliminary work, the collection of the material, can be carried out by any one. As most of those present are aware, it has been the custom in New York to deposit in various localities in the city boxes containing two test-tubes; one of these contains sterilized blood serum, and the other contains a sterilized cotton swab. Printed directions are given as to how these tubes are to be used. The physician removes the swab from the sterilized tube, rubs it thoroughly over the diseased part of the throat, and then transfers this swab to the serum tube, rubbing it over the surface of the serum. The box with its tubes is then returned to the station. These tubes are collected every day, and placed in incubators over night so that a growth will develop. The next morning they are examined bacteriologically. Thus, in the course of a few hours it is possible to report whether diphtheria bacilli are present or not, and as to what other organisms are present. It may be of some interest to pass around a similar outfit which we have here—one tube contains the sterilized swab and the other tube has the blood serum. The cultures develop promptly within twenty-four hours, and it does not require very much expertness to pick

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out colonies of bacilli from those of the micrococci that are frequently present.

Another point that has been brought out, of great importance from the bacteriological standpoint, is the presence of foreign micro-organisms in diphtheria, and the information they give us regarding prognosis. It has been established quite freely by experiments of Drs. Martin and Chaillon and others that the Lœffler bacilli may or may not be accompanied by other micro-organisms which may influence the course of the disease favorably or unfavorably. Thus, when the Lœffler bacillus is accompanied by a small diplococcus, the indications are favorable for the outcome of the disease. The figures which I have given in my paper are very emphatic on this point. Recovery is more frequent where the Brison diplococcus is present. On the other hand, bacteriological examination reveals that where the staphylococcus or streptococcus is present, accompanying the Klebs-Lœffler bacillus, the prognosis can be set down as very unfavorable. The mortality in such cases is vastly higher than in those cases where the Lœffler bacillus is present in pure culture, or when accompanied by this small diplococcus.

I will say that, so far as the bacteriological examination goes, if the disease is examined on the first day the Klebs-Lœffler bacillus is always present. Consequently in those cases the most favorable results are obtained. On the other hand, unfavorable results with antitoxine are obtained when the disease has progressed beyond the fourth or fifth day, and other micro-organisms, as streptococci, staphylococci, and other forms have invaded the body, giving rise to septic complications.

Dr. Thomas, Albion. I have little to say on this question, except to report a little clinical experience with the serum. During the past twelve years, in the locality in which I reside, Albion, scarcely a year has passed in which I have not had cases of diphtheria. I can hardly regard it as epidemic; they are rather sporatic cases. But the peculiarity has been their

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severity; our mortality has run from seventy-five to eighty per cent. This last winter the disease began again, characterized by great severity; the first eight cases with which I was connected were treated with antitoxine, and for the reason that we could not obtain any reliable preparation the mortality was fifty per cent.; four of the eight cases died. Following these I had nine cases, and we used the Behring antitoxine, and we had the remarkable result of one hundred per cent. recoveries. That probably has been the result of those who have used antitoxine. Why I am called to my feet more especially is to obtain information from Dr. McClintock and those who have had experience with this antitoxine as to whether they have relied exclusively upon the antitoxine treatment, or have employed the ordinary and recognized treatment as we usually do in these cases.

Dr. McClintock. Those who have had large experience in using antitoxine still employ the ordinary treatment, while the antitoxine is used to destroy the poison alone. The general strength of the child should be kept up; local measures should be adopted; intubation or tracheotomy performed when indicated. No other measures should be neglected. The antitoxine does but one thing; it destroys the specific poison of the disease.

Dr. J. E. Clark. There is one very important matter in connection with this antitoxine that I am very anxious over, and I think the members of the society are entitled to a little instruction concerning it. And that is whose preparation is to be preferred. I do not know, and I think the experts could probably favor us with their opinion without injuring any firm. They could mention some makes which they consider superior, and do no harm to those they consider inferior by not mentioning them. It seems to me a matter of importance, and the question has been asked of me many times. There are certainly good brands. I understand some are very inferior. I never heard any specific statements in

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regard to it. It is a matter of life and death, and I do not think that ethical points should prevent those who are in possession of the facts from laying them before the meeting.

DR. V. C. VAUGHAN. There are one or two things I am prompted to say. Dr. Howell has not been answered yet. The cultures of the Lœffler bacillus are, in their early stages, acid; and, of course, with rapidly growing membranes it is not strange that the secretion from them should be acid. Dr. Wright should have mentioned the fact—I always speak up for my locality—that Dr. George, of Ann Arbor, read a paper on the turpentine treatment of diphtheria a few years ago before this Society.

DR. GRANGER, Bay City. Since the question has been brought up in regard to the burning of sulphur ordered by the State Board of Health, the question has come to me as a member of the State Board of Health, which would be the cheaper, sulphur or turpentine? If it would take from ten to twenty, or forty to sixty drops of turpentine every two hours to cure a child, how much would it take to cure a school house infected with diphtheria? [Laughter.] There has been a question in my mind, which would be the cheaper to use.

DR. WRIGHT, Unionville. Dr. Granger having practiced in the same town at a time when he had to walk instead of ride is aware that the outbreaks from then to now have cost more to the community than a little turpentine to wipe over school house seats and furniture.

DR. KING. I would like to say that Dr. McClintock hardly answers the question. We have wanted to know several times in Grand Rapids how long before a bottle of antitoxine would spoil. We have wondered if the solution was not too old to do good, and I would like to ask the question, how long after the solution is made do you think it is liable to be spoiled?

DR. MCCLINTOCK. Antitoxine, if properly made, will never

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spoil, but it will lose its power. If the stoppers were removed, or if in bottling it is not done carefully, a good many of them will be found full of germs. If properly preserved, it does not putrefy, but will keep indefinitely. But as to how long it retains its antitoxine powers, that is a question I cannot answer, because there has not been time enough to determine that.

DR. JOHNSTON. I have perhaps as much confidence in antitoxine as any one here, yet there are a few ideas I wish to express concerning its use in private practice. This whole matter resolves itself into the question, of how much use is antitoxine to the genral run of practitioners in this state. Not many of us have microscopes; and but few of us possess incubators, without which culture tubes are of little use; so that the great majority of us must treat our cases of diphtheria without the aid of a bacteriological diagnosis. We should, therefore, be able to say to general practitioners that antitoxine is quite harmless, and ought to be used in the beginning of every suspected case of diphtheria; because if used late it does but little if any good. Experience seems to show that the serum is not entirely harmless, as we were at first taught. A number of cases of acute nephritis have been found, post mortem, in patients treated with antitoxine, of a character different from that hitherto met with in diphtheria. Dr. Henry Hulst, of Grand Rapids, reported to the Academy of Medicine two cases of erysipelas following the use of antitoxine. As rigid antiseptic precautions were taken in making the injections, the skin of the patient and the hands of the operator, being carefully disinfected, and a sterilized needle employed, it is fair to conclude that erysipelatous germs were present in the serum. On the other hand, the use of antitoxine has not produced such results as to enable us to call it a *specific* for diphtheria as it is ordinarily met with in our practice.

Mild cases of diphtheria recover under almost any judicious plan of treatment; while the death rate of from twelve to twenty-five per cent. in many hospitals where antitoxine has

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been largely used, shows that the serum fails to relieve a large number of severe cases. The mortality in the Willard Parker Hospital in New York has been reduced but ten per cent. Now the beneficial effects of a *true* specific can be seen in the wonderful reduction in the mortality of hydrophobia produced by Pasteur's inoculations, namely, from eighty or ninety per cent. to two or three per cent. A prominent German recently declared that he would use no more antitoxine. I consider, however, that it is a valuable adjunct in the treatment of this much dreaded disease. But, we should not in our enthusiasm depend upon it to the exclusion of other well-known remedial measures, as has been done in many German hospitals. I believe the next few years will see a wonderful improvement in the preparation of diphtheria antitoxine, perhaps by the incorporation with it of an antidote for the toxine of the streptococcus and staphylococcus. Dr. Jennings referred to the length of time the bacilli may live in the throat after apparent recovery from diphtheria. When my child had diphtheria in Leipsic last year, bacteriological examinations of the secretions of the throat were made twice a week after the membrane had disappeared and the child was apparently well. At the end of five weeks bacilli were still found, but they were apparently so degenerated that Heubner's assistant considered it safe for me to remove the child from the hospital. Not wishing to infect my little boy, we made a pure culture of these bacilli and injected them into a guinea-pig. The animal died of acute diphtheritic poisoning in thirty-six hours. It was fully six weeks after the disappearance of the membrane before the throat was free from Lœffler bacilli. So that the point made by Dr. Jennings is a mighty good one, that we must isolate these cases for a number of weeks after apparent recovery. Antitoxine does not destroy the bacilli. I dismiss no case of diphtheria until a bacteriological examination has proven the throat to be free from the germs of the disease.

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DR. GEORGE DOCK, Ann Arbor. The doubts expressed by Dr. Johnston are likely to arise with anybody, but I am quite certain if Dr. Johnston will follow up the subject a little further he will be able to rid himself of some of them. For example, in regard to statistics, in saying you can prove anything by statistics; that means you can also prove nothing by them. And that, of course, is true, and I believe that not even the ten thousand cases treated with antitoxine will allow us, simply as figures, to draw the conclusion that Dr. Johnston seems to think some people would draw. There is another side to the question, however, and that is this; back of these figures are the men who are using the method, and when one reads the reports of those men and reads the experiences they have had with the antitoxine, and when the antitoxine could not be had, which Dr. McClintock alluded to, then one can see there must be something in the method of Heubner and many others. If Dr. Johnston will read the reports that were read at the Congress of Internal Medicine, just coming out, I think he will draw the conclusion that has been presented here by Dr. McClintock this afternoon. Of course it will take many years of experience with many kinds of epidemics and with many cases to show just what the method will do. Then it must be remembered we are in the early days of the use of the method. We do not know yet the exact strength of our preparations in many cases. We do not know how much to use in a given case. We do not know, for example, in a case of diphtheria, what degree of strength of antitoxine that case requires. Say the average case requires fifteen hundred units to cause recovery, we cannot now tell whether a given patient should have three hundred or three thousand. I have no doubt in the course of time we will be able to be at a less disadvantage in the face of that difficulty than we are at present. Then there is another thing to be remembered; Dr. Johnston speaks of the specific nature of the remedy. Now a remedy may be a specific without requiring that it shall cure every case of a dis-

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ease. That would be expecting too much, especially in the case of a disease like diphtheria, a disease nearly always complex, in which there are a number of different micro-organisms at work, and in a disease of that kind I do not see how we can ever expect to find a specific. We would have to get a remedy that combined the anti-toxines of the pus organisms and many putrefactive organisms. The antitoxine does this one thing, it hastens the natural cure of the disease. That is all it does. It hastens that, and it hastens it powerfully. At the same time we have to remember that we are obliged to use the other methods of treatment as has been emphasized by others. It is necessary to carry out local treatment of the throat all the time from beginning to end. It is necessary to keep up the strength of the patient. It is necessary to carry out disinfection afterwards. All these things have to be done now, as they were before the use of antitoxine. At the same time I think it can hardly be doubted that the more the method is used and studied, the more it will be improved, and the more it will be important for everybody to use it. It is not necessary to have a bacteriological laboratory in order to treat cases of diphtheria. Suppose the physician does call a case diphtheric that is really psuedo-diphtheritic; no harm will come to the patient from such error. The experience of the last few months has shown that the accidents that were attributed to antitoxine were exaggerated. The large number of investigations that have been made in Vienna, Munich, and Berlin have shown that the cases treated with antitoxine and that die with complications on the part of the kidney, were enormously less than the cases not treated with antitoxine. The other accidents are trifling. Of course when a case results in erysipelas, that does not mean that the antitoxine causes erysipelas; it means that the doctor injected some erysipelous germs along with the antitoxine, or that the patient in some other way became infected with erysipelas germs. We should remember we do not need a bacteriological diagnosis in order to treat our cases. It would be very much

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better if we could; it would be more satisfactory; and I hope the time will come when this will be more largely done by the general practitioner; but nobody need wait until that be done in order to carry out specific treatment.

DR. JOHNSTON. In connection with Dr. Clark's case, I wish to say that Kossel very distinctly says that in cases of laryngeal diphtheria it is not uncommon for tracheotomy or intubation to be required a few hours after using antitoxine. Before the membrane is cast off it necessarily becomes loose, and laryngeal stenosis is thereby increased. Dr. Clark's case is a beautiful illustration of this fact.

DR. DOCK. Just a word on that. Of course, in many cases where antitoxine is used tracheotomy and intubation becomes necessary, yet the use of the remedy will not make the tracheotomy more necessary. It is very different from the use of tuberculin. Everybody who has used antitoxine admits that in most cases the membrane fails to increase; it either softens down, or curls up and disappears, and the best results are seen very often in laryngeal cases.

DR. JENNINGS. In reply to Dr. Vaughan, I omitted to make one remark, and that is with reference to Lœffler's solution. In my observation, where it can be applied to a diphtheritic membrane it is one of the best local applications. Now, I do not wish to cast a shadow of a doubt upon the antitoxine treatment. My observation of it has been of the most favorable character. There is only one point, perhaps insignificant, and that is Dr. McClintock's statement as to the results in New York upon cases that were diagnosticated bacteriologically as diphtheria. It must be remembered that he stated that many cases that were not diphtheria received the benefit of the cure of diphtheria under the old treatment, while under the present method of antitoxine it was settled definitely they were diphtheria. That would just about balance up, because now many go into the hospital who under the old system would not be classed as diphtheria. Dr.

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Shurly has called my attention to the use of irrigation in Harper Hospital, and it is a measure carried out there with the greatest rigidity, irrigating the naso-pharynx every fifteen minutes or an hour, and he reports the most favorable results. So far as my observation goes, antitoxine is one of the greatest additions to therapeutics that has been made within the century, and Dr. McClintock's paper should be carried to the mind of every practitioner. As the Secretary has stated, it is not necessary to have a bacteriological laboratory in order to use antitoxine in a case of diphtheria. Every practitioner, no matter how remote he may be from the large centers, can introduce antitoxine as well as his more fortunately situated confreres. It is a treatment above all others that is open to the general practitioner. The remote practitioner can inject antitoxine and get a curative effect when it would be absolutely impossible for him to properly treat the case in the old way. It is by far the easiest method of treatment that is known at the present time.

DR. EDWARDS. I would like to ask Dr. Dock or Dr. McClintock in regard to the dose. In an institution in which I have something to do, there are a good many cases of diphtheria, and we can not determine the doses of antitoxine for a given case. I would like to ask for my own information what dose the Secretary would begin with in an adult person.

DR. DOCK. My own experience with the remedy has not been large enough to say. So far I am unable to say.

DR. MCCLINTOCK. I can only say what has been the experience of others. They have concluded we would need at least ten times as much to protect a given weight of child as we would a given weight of guinea pig. The average child three years old it has been recommended to give a thousand units. That has been generally adopted.

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THE PUBLIC CARE OF EPILEPTICS BY COLONIZATION.

W. M. EDWARDS, M. D.,
Kalamazoo.

The state of Michigan provides liberally for nearly all of its defective and dependent population. There are five asylums for the insane; the deaf and dumb and the blind are taken care of in educational institutions; wayward boys and girls are collected into homes where they are cared for physically and morally; and dependent children receive the support of the state. Criminals are secluded in our well-managed prisons, and petty offenders and delinquents are sequestrated in our county jails. We shall soon have in operation a public institution for the care and education of feeble-minded and epileptic children. When we contemplate our charitable and educational institutions, and especially when we compare them with similar ones in other states, we feel justly proud of the munificence of the state toward the helpless, defective, and dependent. There is one class, however, for which no provision is made in Michigan either by public or private charity. Epileptics as a class, especially adults, have no public home, asylum, or retreat where they may receive care and treatment, and those who are dependent must either find a home in the county poor houses, or be sent to the asylum for insane.

In foreign countries, and in our own, there is a growing tendency to make provision for the separate care and treatment of epileptics. This provision is being made not along the ordinary lines that have been followed in public institutions and hospitals, but by a system of colonization. The

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earliest institutional provision for epileptics was perhaps made by a minister by the name of John Bost, pastor of a Protestant Church near Bordeaux in France. One of the oldest and the most noted colony for this class of sufferers is the Bethel Epileptic Colony at Bielefeld, in Westphalis, of which we shall speak later. Ohio and New York have made separate provision for epileptics, and other states, like our own, some partial provision for their care in asylums for the feeble-minded, the provision in such case more especially being made for the education and treatment of feeble-minded children than for epileptics.

Various theories have been advanced to account for epilepsy, but none of them have ever been generally received, and the pathology of this disease is to-day apparently as little understood as in the past. It is generally conceded to be a disease of the brain, but the character of the diseased process, or its exact location, is a matter of speculation only. Mr. William P. Letchworth, in a recent paper on this subject, quotes from Dr. Ludwig Hirt's work on diseases of the nervous system as follows: "By epilepsy in the stricter sense of the term we designate a functional neurosis, the seat of which is still unknown." From Dr. Jules Christian: "Nobody really doubts that epilepsy is a disease of the brain; upon that all are agreed, but no one has been able to determine with any precision the part of the organ affected, nor the nature of the lesion which produces the disease. All the researches of pathological anatomy have hitherto been at variance. To anyone asking my opinion as the approximate cause of epilepsy, I should simply say I do not know." At present, perhaps, the best we can say of our understanding of the disease is that it is an aggregation of symptoms. A chronic, and in adults an apparently incurable disease characterized by attacks of unconsciousness and spasm, preceded in some cases by warning symptoms, and alternating with quiet, lucid periods of variable duration. The seizures occur with variable frequency. They may occur several times in each day, or they

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may happen once a day, or week, or month, or even at much longer intervals. Whatever may be the causation or pathological anatomy of the malady, those familiar with it appreciate its great gravity and the dire results to the person afflicted by it. The individual who is a sufferer from this disease is not admitted to schools, churches, or places of amusement; the ordinary occupations and trades are, to a considerable extent, closed to him, and, in fact, he is in many cases an outcast from society. The affliction of an epileptic child in a family and the serious influence of association of other growing children with it, is well known to medical gentlemen. Such a child is not allowed to attend the ordinary schools, and is very apt to grow up in vice and ignorance that may subsequently render its seclusion from society in general a necessity. In the case of the adult epileptic the ordinary means of livelihood are closed; many of them become depedent on the charity of individuals, or the public; no general hospital will receive them for the treatment of their malady, and they sooner or later drift into our county poor houses, or they are sent to the asylums for the insane, neither of which are suitable places for them. In the poor house the epileptic cannot receive the treatment which his infirmity demands; he is most apt to be neglected, and, by reason of his unhappy environment, the progress of his malady is accelerated.

On the first day of June, 1894, as nearly as could be ascertained by the census takers, there were 1,373 epileptics within the state of Michigan, of whom 793 were males, and 580 females. This number is probably much below the actual existing number within the state. The gentleman in charge of the Bureau of Statistics in the office of the Secretary of State, who has given much attention to the subject, informs me that in his opinion it is very much below the actual number. In the ordinary compilation of medical statistics it is customary to consider one person in every five hundred an epileptic, but even taking the German basis, viz., one epileptic to every one thousand of the population, there would be, according to the

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latest census of Michigan, 2,240 epileptics within the state. It seems to me that it is at least safe to assume that, were the absolute number ascertained, it would be found that there would be not less than 2,000. On the 15th of May last, there were 95 epileptics in the poor houses of the nineteen counties forming the district of the Michigan Asylum for the Insane. Assuming that the same proportion to the total population is to be found in the poor houses of the other counties, there are 282 epileptics in the several county houses of this state. These are supported at public expense. At the same time there were 314 epileptics in the several asylums. If 10 per cent. of these, the average percentage, were supported at private expense, we may assume 283 to be supported at public expense. Add to this the number in the county houses, and we have a total of of 565 in the poor houses and in the asylums supported by the public. Statistics obtainable by the Secretary of State at the time of the last census show but 265 supported by the public. In view of this great discrepancy, we are certainly warranted in thinking that the number taken by the census takers is far from complete. Of these 1,373 reported to them, 959 were single, 317 married, 73 widowed, 16 divorced, and the civil condition of 8 was unkown. Thirteen hundred and fifty-nine were white, 7 colored, 1 mulatto, 5 were Indians and 1 unknown. Three hundred and seventy-one were said to be self-supporting, though in many of the cases they probably supported themselves under the direction and supervision of some one else. Eleven were supported partially by the public, 265 wholly by the public, and the support of 726 was unascertained. It is safe to suppose that of this last number, 90 per cent. were dependent upon parents or friends for support, and, should they be deprived of that care, they would speedily become public charges. According to the statistics obtainable, we may assume 1,002 epileptics in the state are entirely dependent on individuals or the public for their support. Of the total number, 4 were under one year of age, 2 were one and under two years, 7 were two and

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under tnree years, 3 were three and under four years, 7 were four and under five years, 69 were five and under ten years, 122 were ten and under fifteen years, 185 were fifteen and under twenty years, and the remainder, 964, were over twenty years of age, with the exception of 10 whose ages were unknown. Under the provisions of the existing law, only those under twenty-one years of age, or about 430 of these, would be entitled to admission to the Home for Feeble-Minded and Epileptic at Lapeer as organized at present. There is no public provision for the remaining 943 other than in the county poor houses, or in the asylums, as before noted. They are given places in the asylums largely because they become demented and to some extent unmanageable at home. On May 1st, 1895, there were in the several Michigan asylums, including St. Joseph's Retreat, 314 epileptics. Some of these, by reason of insanity, may be properly inmates of an asylum only, but many others could, with benefit to themselves and the insane with whom they are associated, be very readily cared for in a home for epileptics. They appear to have a natural attraction for each other, but their presence in the asylum exerts an untoward influence, especially on the acute, impressionable, curable, and convalescent cases. The benefits to be derived from the separation of the epileptics from the insane are two-fold, as each class is improved by it. Epileptics can be better treated alone where treatment can be more regular and systematic. Proper restrictions in diet can be made when it effects the entire class without exciting jealousies. That general good which comes from gathering persons similarly afflicted will result, and willing hands will always be ready to help if one is afflicted with a seizure. The insane will be benefitted by the removal of one of the most disturbing elements of asylum life, with all its pernicious effects. The insane and epileptic act and react unfavorably on each other, and the presence in the asylums for the insane of the epileptic class is, perhaps, the source of more discomfort and trouble in managing the wards than any other single factor.

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Cases of depression and melancholia would not be horrified by seeing, perhaps for the first time, a person in an epileptic seizure, and suffer from the dread that they may soon become similarly afflicted. The improvement of the convalescent patients would not be retarded, and the general welfare of the persons for whom the asylums are intended would be largely promoted.

The general movement for the support and better care of epileptics may be said to have had its origin in, and been stimulated by, the success of the effort that has been made at Bielefeld in Westphalia. About twenty-eight years ago, through the efforts of a Lutheran clergyman, Pastor Von Bodelschwing, whose sympathies for persons afflicted with this dread malady were aroused, a provision was made for the care of a few persons in a house of his own. From a beginning of four persons this has grown until now more than eleven hundred epileptics find homes, care, and education in this colony alone. It is a private, charitable institution, largely supported by its own receipts, receipts from private patients, and voluntary subscriptions; it also receives some funds from the public authorities. Its plain, unpretentious buildings are scattered over a tract of about one thousand three hundred and fifty acres of land, and it has more the appearance of a village than an institution for the care of a defective class of people. As it is in one sense an industrial institute, the men are taught the trades and engage in more than thirty occupations. Among these are carpenter work, blacksmithing, shoemaking, saddlery, tailoring, basket making, iron work, mill work, book binding, printing, brickmaking, the care of all kinds of stock, cultivating the fields, meadows, orchards, and gardens. A large part of its income is derived from the growth of seeds for market. The women are engaged in sewing, knitting, gardening, and housework. Dr. Frederick Peterson, of New York, who visited and described this colony in 1886, says that it is almost self-supporting. Among other things he says: "To sum up the objects of this

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colony it is, in the first place, a hospital for the cure of epilepsy, and attempts at cure are made upon every patient, without exception. It is a school for the instruction and education of epileptic children; it is an industrial institute for epileptic youths and adults; it is an asylum for those who become demented from the effects of the disease. Although the colony is under the domination of the church, and has a Lutheran pastor at its head, three physicians are employed to supervise the medicinal treatment, one of whom is a resident of the colony. * * * Visitors are deeply impressed with the happiness, contentment, and prosperity everywhere apparent among the inhabitants of this little epileptic world. No longer an experiment, it answers the previously unanswerable objections to such aggregations. Since its foundation more than two thousand patients have been treated here, more than one hundred and fifty cured, and more than four hundred and fifty discharged improved." So successful has this colony been that there are now nine others in Germany, one each in France, Switzerland, and Holland, and three or more in England. In the latter country, however, the care of epileptics in homes or colonies has not yet passed the experimental stage. It is only within the last few years that interest in this subject has been awakened and has taken practical form within the United States.

Ohio is the pioneer in this work. A hospital for epileptics established by the state, and located at Gallipolis, was opened on November 30th, 1893. The act authorizing the construction of this hospital denominates it "The Ohio Hospital for Epileptics and Epileptic Insane," and makes its minimum capacity one thousand, and it is expected when it is completed to receive all epileptics in the state asylums and the county poor houses, as well as those from outside. This is not a colony as are the German institutions, but is built on the cottage plan, similar to the plan for our new hospital for the insane at Newberry, in the Upper Peninsula. Dr. H. C. Rutter, the manager of this hospital, writes under the date of

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May 6th, 1895, as follows: " * * * We have not yet made arrangements for the care and treatment of the insane, but hope to do so in the near future. When the present buildings are completed, we shall have accommodations for six hundred and seventy-five people, and expect larger appropriations next winter. I am unable to state what the probable cost per capita for running expenses will be, as we have not been able to make provision for fully utilizing their labor. It will, however, be much lower than in the ordinary institutions for insane. This is not a colony, properly speaking, and would not serve as a model for any such institution. It is built upon a plan somewhat similar to the insane hospitals at Toledo and Kankakee, and we do not possess sufficient land to scatter the patients over a large field and inaugurate a colony proper. We shall be compelled to adopt various trades other than the agricultural pursuits. We are paying a good deal of attention to the medical department in the lines of physiological chemistry, pathological histology, and empirical experimentation with drug treatment, dietary, and education."

Through the influence of Dr. Peterson, assisted by the State Board of Corrections and Charities, New York has provided a colony for epileptics which is known as the Craig Colony, and located near Mt. Morris, in Livingston county, in that state. The law establishing the colony was passed in the spring of 1894. A committee from the State Board of Corrections and Charities spent considerable time in looking up a situation, and finally selected a tract of land of one thousand eight hundred and fifty-six acres owned by the Shakers and known as Sonyea Colony. There are upon this tract about thirty-five buildings, including dwellings, barns, stables, workshops, and a mill. These buildings are now being put in order for the reception and accommodation of patients. There are already upon it extensive orchards, and large berry and vegetable gardens. The place is easily accessible, as a north and south railroad, connecting with leading

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trunk lines, runs through it, and there is a station on the premises. In a circular issued by the board of managers it is said that "The object of the colony is to provide for the four great needs of epileptics, which are not satisfied elsewhere:

First.—To give them schools where they may attain any degree in education.

Second.—To provide industrial training of all kinds, for there is no vocation which some epileptics may not follow.

Third.—To give them a home when all other doors are closed to them.

Fourth.—To see that each and every case is carefully studied and treated by the best scientific methods the world affords."

Provision will perhaps be made at this colony during the present summer for one hundred patients. The plans contemplate that it shall finally care for from fifteen hundred to two thousand, and that it shall rival the Bielefeld colony, after which it is modeled.

In California provision is made for the care of epileptics at the Home for the Care and Training of Feeble-Minded Children, but in separate buildings. There are probably in the neighborhood of one hundred cared for at this place. In Minnesota the Board of Charities and Corrections and the State Conference of Charities recommended last year that separate provision be made for epileptics by the establishment of a colony, but nothing has as yet been done by the Legislature. In Illinois special recommendation for the establishment of an institution for the separate care of epileptics was made to the Legislature, but in that state, like Minnesota, no provision has as yet been made.

St. Clement's Hospital at Philadelphia is a special hospital for the care of epileptics. It is a non-sectarian institution, and is supported by private charity, having no part in any church funds. It was opened for the reception of epileptics on the 1st of January, 1893, and accommodates only a limited number, probably not more than twenty. It is, so far as

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I know, the only private institution of its character in this country.

In reviewing this matter we find that, although the subject may be said to be in its infancy, there are three plans for the care of epileptics. The Michigan plan, which is also in vogue in California, contemplates the care of epileptic children in an institution with feeble-minded. No provision is made in either of these states for the care of insane epileptics. The Ohio plan provides an institution on the cottage plan for the care of both sane and insane epileptics, and contemplates the eventual collection of all epileptics into one institution. This is situated on a comparatively small farm, and is more of a custodial than an industrial institution. The New York plan, or the colony plan proper, provides for the care of epileptics in separate small houses scattered over a large farm, with shops and other buildings, having much the appearance of a country village. Experience in foreign countries would indicate that this is the best plan. It contemplates the aggregation of epileptics in an institution where they shall live under the most natural conditions. When received into the institution they will be set at work or study, and will be given employment that will be productive; and thus, while they will live under the most healthy conditions, the cost to the state for their support will be reduced to a minimum. In fact Dr. Peterson states in a recent letter that it is expected that the colony will eventually be self-sustaining. The future plan for the care of this class of people in Michigan should be early determined, and should be so thoroughly considered in all its bearings, that when adopted it shall stand the test of time and practical operation. It would seem far better that the epileptics should be separated from the feeble-minded, and each cared for in a distinct institution. If the Legislature of Michigan should see the wisdom of establishing a home for epileptics, it should be on a broad foundation and along liberal lines. From the humanitarian and economical standpoint, it would seem best to make such provision by a colony plan.

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There should be a large farm, certainly not less than one acre to each possible inmate of the home. Such a colony should be located reasonably near to some large city, that a market might be found for excessive products. Besides being an institution for the treatment of epilepsy, and a school for the education of epileptic children, it should be a working community. Various ordinary occupations should be carried on, and the different trades introduced as found necessary or remunerative. Vegetables and flowers might be grown for sale, and prove a source of income, as would the raising of seeds of all kinds for the general trade. Once established, increased provisions could largely be made by the resident population. Bricks could be made by the patients, and much of the ordinary work of building new houses done by them. In the construction of an institution for the care of this class of people, less attention should be paid to the so-called imposing effects of its structures, and more to the home-like appearance and adaptability to the purpose. The houses should be small and not too compactly situated, and should present an attractive appearance. With small homes the best classification can be had, and the results of treatment best attained.

Such an institution should be equipped with every necessary appliance, and given the most unrestricted opportunity for the scientific study and treatment of this disease, both for the immediate results that may accrue to those under treatment, and for the future prevention or cure of this malady. The object of this paper is two-fold:

First.—To speak of the work in this line that has been done in other states and countries.

Second.—It has been written with the hope that the members of the medical profession, and especially of this society, may become interested in the matter and lend their influence in making some suitable public provision for caring for this neglected, dependent, and distressed portion of our population.

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SOME FORMS OF TROPHO-NEUROSES, WITH AN ILLUSTRATION.

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My attention has recently been called to a case of trophic disorder so interesting in certain of its features that it occurred to me that it would be profitable to present it to the members of this section of the association, as a text for the consideration of the nature and symptoms of this peculiar class of disorders, concerning which very little that is definite is yet known.

This case can, with sufficient reason, be classified among the neuroses. But, as it has not yet progressed to any marked degree in the direction of any one of those forms of nervous derangement which have, as yet, received a name, it will, in our attempt to classify it, serve to bring the salient features of several of these interesting diseases under review.

Miss R., of Kansas, aged twenty years, presents the following history. Her father died at the age of sixty of sunstroke. Her mother is living at the age of sixty-one in good health. Her father's father lived to a good old age. Her father's mother died in childbirth. Cause of death of her mother's father is not known. Her mother's mother died at the age of thirty-eight of pulmonary consumption. Her father had seven sisters; two are now living, one at the age of seventy, the other at the age of sixty. One died of cancer of the tongue; another of pulmonary consumption; another of the rupture of a blood vessel; the cause of the death of the two others is not known. Her father also had four brothers,

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one of which was killed in battle; one died of pulmonary consumption; one suddenly of heart trouble; cause of death of the remaining one not known. Her mother had four sisters, one of whom is still living and well at the age of fifty-nine; one died of dropsy; one died in childbirth; cause of death of the remaining one is not known. Her mother had one brother, who died suddenly from an unknown cause. The patient herself has five brothers, all in good health; and one sister, likewise in good health. There has been no deaths in her immediate family.

As to her personal history, she was strong and healthy as a child, and remained so until the age of sixteen. About that time she began to complain of being persistently tired, and had an anomalous appetite; she had a longing to eat charcoal, starch, ice, and such substances. She began to complain of her fingers being bloated and feeling numb, and on some days, especially in cool weather, they looked blue. This continued to grow worse each year, until now her fingers and hands have undergone considerable change in size, and the trouble has extended to the forearm, face, feet, and legs, the same swollen condition and bluish discoloration being often noticeable in these parts. She has noticed for the past year that her face is stiff; has a feeling of being drawn as if it were covered with a close mask. Her hands are always worse in the morning, that is, they are more swollen and darker in color than in the after part of the day. In winter the tips of the fingers and the skin on the backs of the finger joints crack and separate, and there is at the finger tips, and at a few of the knuckles, some destruction of tissue which causes a small, dry slough. The parts so affected then heal, but the same process is likely to be repeated. This dry gangrene has not as yet affected any other part of her body. As to her present condition, the general appearance is fairly healthy. Her appetite and digestion are moderately good; her bowels regular. The circulatory organs, as far as gross changes are concerned, are in good condition. The heart's

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action is regular, although the pulsation is a little weaker than normal. There is no evidence of organic disease. The respiratory organs are normal in structure and action. The menstural function is normal. She always feels better at her monthly periods and worse in the interval between. The quantity of urine is about three and a half pints daily. Specific gravity, one thousand and ten; no albumen or other abnormal constituents. Special senses are, for the most part, in good condition. There is some slight impairment of vision, with insufficiency of the internal rectus of the right eye of one degree. The general sensibility is normal, except for a slight numbness in the swollen hands. There are no pains; even the gangrenous sloughs and cracking are attended with but little soreness; no hyperæsthesia. The patellar tendon reflex is absent.

For the last two years or more she has felt "good for nothing," tires out easily, and when tired her jaws seem "to set." She is more nervous and emotional during the last four years than formerly; cries easily.

It will be seen from this description that we have here a slowly progressive, symmetrical, painless, trophic disorder, affecting in the order named the hands, the forearm, the face, the feet, and perhaps to some extent the legs between the ankles and the knees. That which was at first a temporary, but recurring, vascular disorder, with swelling, discoloration, and numbness, in all probability functional in character, has resulted later in tissue hypertrophy of a permanent nature, chiefly noticeable in the hands and forearms and cheeks. This tissue hypertrophy is mainly of the subcutaneous connective tissue in the parts affected, giving to the touch a firm, elastic, resisting feeling, and so distending the overlying skin as to prevent it from being pinched up into a fold easily, and in some cases this cannot be done at all. This is more or less the condition of the skin and underlying connective tissue over both hands and feet, over both legs, and even the lower third of the thighs, and over the forearms, especially the right fore-

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arm, and the cheeks. The tip of the nose, the lips, and the tissue of the breast are also affected. None of the mucous membranes seem to be changed in this manner, nor is the tongue involved. The thyroid gland is normal. The distended skin is dry and smooth; there seems to be deficient action both of the perspiratory and sebaceous glands. The face has a flushed appearance continually, as if the patient was blushing, but this state of vaso-motor dilatation is greatest when the attention of others is fixed upon it. In the left thumb the hypertrophy of tissue has involved the bones as well as the subcutaneous connective tissue, and all parts of this thumb, as compared with its fellow, are enlarged. The degeneration of the skin of the back of the finger joints and tips of the fingers has resulted in fissures and cicatricial depressions or pits, which as yet are confined to small areas, but this loss of tissue at certain of the finger tips has caused the finger nails to curve over the ends of the fingers.

In attempting to establish a diagnosis and prognosis of this peculiar case we have but little to guide us, since the disorders that are on record, which are characterized by symptoms which in any respect resemble those here shown, possess so many other symptoms which differ so largely from any that have been found in this case, that they do not serve to throw much light on the subsequent course which the disease in this patient is likely to take. There are several trophic disorders which in some respects and at certain stages are suggested to the mind of the neurologist by the symptoms here presented, with which comparison must be made in our attempt to classify the changes which are here observed under the name of any disease already recorded in the text-books. Among those which have features somewhat in common are Raynaud's disease, Morvan's disease, scleroderma, vaso-motor paralysis, and acromegaly.

Raynaud's Disease is characterized by paroxysms in which the fingers, ears, tip of the nose, and tongue become white, bloodless, or cold; apparently there is a vaso-motor spasm,

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which is followed by a blue and mottled condition of the parts, which at times become quite black, and a gangrenous destruction of the distal ends of the fingers and toes may result. The disease comes on suddenly, and effects, ordinarily, only two or three fingers of a hand. It is usually attended by much pain and a burning sensation in the parts affected, but the anæsthesia is slight. Although the parts are swollen during the secondary stage, there is no overgrowth of tissue, and the destructive action is quite pronounced, often resulting in the loss of the the terminal phalanges of the fingers or toes. A hemorrhagic condition often attends the gangrenous ulceration, and hematuria may be present. Slight exposure to cold is commonly a producing cause of such an attack, and young adults, especially women are affected oftener than men. Although we here have some features in common with the symptoms now under observation, the milder and more chronic course of the disorder, the lack of pain, the much wider distribution, and the hypertrophy of tissue are sufficient to prevent us from classifying it under this head.

Morvan's Disease is a very rare disorder characterized by a slowly progressive paralysis and atrophy of the hands and forearms, with severe pain at the outset, but later analgesia. Destructive ulcerations of the fingers resembling whitlow occur, but are painless. The parts involved are usually swollen and œdematous. There is loss of pain and temperature sense, but that of touch remains. There is weakness and muscular wasting in the hands and forearms. This disorder has been found to depend in many instances upon a peripheral neuritis, and again is associated with the spinal cord disorder termed syringo-myelia.

The analgesia, atrophy, and distribution, together with the known etiology, which has no part in the case we are now considering, would serve to exclude the latter from this category.

Acromegaly.—If we attempt to find in this case the typical symptoms and gross tissue changes which characterize the

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later stages of acromegaly, we will be disappointed. The hands are enlarged by true hypertrophy of certain of the tissues, but only in the thumb of the left hand do all of the tissues seem to enter equally into the increase. In other parts, while the skin does not seem to have atrophied, it has not kept pace with the underlying growth, and is stretched and smoothed in consequence. The typical gross enlargement of all the tissues of the fingers and toes, including the bones; the thickening of the hand and foot proper; and the increase in breadth and thickness of the lower jaw and nasal bones, characteristic of acromegaly, are wanting. The face maintains a distinct oval outline rather that that of an elongated eclipse, and there is no evidence of dorso-cervical curvature of the spine. While in the left thumb there only appears that form of increase of all tissues that is so marked a feature of acromegaly, yet many of the cases reported by Maris in his classical work, and by others more recently, make note of vaso-motor spasm and congestion similar to what has occurred here.

The disorder termed *vaso-motor paralysis* has received separate mention by some authors, namely Gray, but it is not improbable that this is but the prodrome of certain organic diseases, the subsequent courses of which have escaped observation. It is true in this case we find vaso-motor paralysis, but the subsequent tissue hypertrophy and necrosis of tissue would serve to take it out of this category, since vaso-motor paralysis or paresis is, as far as known, a purely functional disorder.

In *scleroderma* there is stiffness and hardness of the skin of both lower and upper extremities, or it may be more universal. The skin is cold, tight, firm, and so closely attached to the underlying structures as to be incapable of being pinched or wrinkled. The affected surface may be swollen and moderately elevated or shrunken. It is smooth, white, or pigmented. The stiffness of the skin renders parts that it covers less mobile. The mucous membranes are at times

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affected in like manner. Atrophy of the skin occurs, and causes an apparent shortening of the fingers and toes. They may become semi-fixed in consequence. Sensations are, as a rule, normal. Pain is not a constant symptom, usually only temporary if present at all, and is then in the joints or the muscles.

The temperature of the parts affected may be sub-normal. The secretory functions may be excessive or diminished. This affection occurs more commonly in females between the ages of twenty and fifty. Its duration is from six to eight months as a rule. If we could add to this picture of scleroderma a preliminary period of marked vaso-motor disturbance, at first irritative in character and then paretic,—irritated by slight exposure to cold,—and if hypertrophy rather than atrophy was common to it, we would have little hesitancy in deciding that the disease of which Miss R. is suffering is of this nature. The destructive changes in the tips of the fingers that have occured to some extent in her case are not unknown in scleroderma, but often becomes a prominent feature, causing deformities of the nails, and loss of the terminal phalanges of the fingers and toes.

If this is a case of scleroderma, it is a very anomalous one, much more chronic in its course than is customary, and possessing some symptoms and tissue changes that have not been heretofore observed or recorded as accompanying it.

The fact of the matter is, that either in this case the disease has not progressed far enough to give us the symptoms in sufficient number or prominence to enable us to refer it to any form of trophic disorder already having the sanction of general consent as to separate classification, or we have a new disorder partaking in many respects of characteristics resembling those of other trophic neuroses, but yet sufficiently distinct to deserve to be regarded *sui generis*.

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A CASE OF INSANITY DURING PREGNANCY.

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Detroit.

The comparative rarity of this form of mental derangement of which the following case is an example has led me to believe that its narration may prove of some clinical interest. Insanity during pregnancy is not very common, fortunately, and not so common as insanity of the puerperal state. The importance of a correct diagnosis in regard to the etiological factor producing aberration of the mental faculties during pregnancy is one of great moment, and upon the correct interpretation of the causal relations to the diseased condition depends a great deal, and, furthermore, determines future action and mode of treatment. Once having concluded that the mental disturbance is due to pregnancy, many vexatious questions arise as to what shall be done. *First:* Can the symptoms be allayed by any therapeutic agency, and the patient tided over safely to proper term, both as regards physical and mental condition, and if so, what agencies shall be employed? Or, *second*: Shall we allow the patient's mental condition to continue, doing in the meantime what we can for her physical welfare, and trust for a righting of the balance-wheel at the end of gestation? Again, if both the above questions are answered in the negative, is it our duty to at once evacuate the uterus, and seek for a restoration of the mental faculties along that line? It would seem a conclusion easily arrived at, that in the event of the patient's life being jeopardized by the mental derangement, the proper action to take would be instant evacuation of the contents of

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the uterus; but the case does not always end here. In considering the necessities for inducing labor, the profession is not at all agreed; and upon this one disease of pregnancy, which is not generally considered at any great length, still more variance of opinion is met. The highly problematical future state of the patient forces itself upon one, and many think that labor induced for this cause will surely be followed by puerperal insanity. Puerperal insanity is much commoner than antepartum, and it can only be with fear and trepidation that we take the last course, feeling at the time that we are not absolutely certain of the results. One of the gravest effects of the neurotic diseases of pregnancy is the profound disturbance created in the dynamic condition of the patient, which so easily leads up to general physical failure and collapse. The whole physical being is so lowered that vital recuperation seems to be impossible, even after the removal of the supposed cause—pregnancy. It was after considering every detail in connection with the diagnosis and prognosis in such cases that the course taken in the following case was agreed upon, and the happy result, and one which was so marked, was obtained.

Without entering into the neuro-pathological aspect of these cases of insanity during pregnancy, I have purposely confined my remarks to the clinical side of the question. June 19, 1894, I was called to see Mrs. G., aged twenty-three, medium in size, well developed, and of dark complexion. I was met at the door of the house by the husband, and immediately following upon his heels was his wife, the patient.

She was uttering incoherent and disconnected sentences, exhibiting at the same time a great restlessness with erratic movements of arms and hands; her head, which was bound with a cloth, was bent over nearly upon her chest, eyes continually oscillating, and tongue frequently protruding from the right angle of the mouth. In endeavoring to converse with her, it was found that she was frequently at a loss for a word

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to continue or complete her sentences, and often forgot one subject in hand and took up another. Her chief impression, as far as could be ascertained, was that if the blood would come (meaning her menstruation) she would be all right. Pain was complained of over the left fronto-parietal area, which was relieved somewhat upon pressure. This mental condition had existed two weeks previous to my being called to see her.

She had lost weight, and all appetite for food. Articulation of speech was also defective. Recognizing the importance and gravity of the case, it was advised to have her removed to the hospital for observation pending the course of treatment to be pursued, and where she could have better care than in her own home. The following personal history was obtained from the husband and corroborated since by the patient herself. Her age is 23 years. Has been married two years. This is her first pregnancy and is of three months duration,—last menstrual period being March 25. When born she had sores about buttocks, vulva, and arms. When seven years old she suffered from a sore throat, loss of hair, and sores on both legs,—the scars still remaining. These symptoms recurred at the age of fourteen. When between the ages of fifteen and sixteen she was struck on the left parieto-frontal portion of head with a chain by an enraged uncle. Menstruation began between seventeen and eighteen. Before each menstrual period she has suffered great pain in the lower abdominal zone, also in the left anterior aspect of the head. Menstruation was attended with the passage of clots of blood. Pain continued for two days and then disappeared. Periods last about five days. When a child she also had convulsions, and at the age of fourteen years was confined in an insane asylum for seven months. Family history: Father had syphilis, conveyed it to her mother, and the patient inherited it; father died aged fifty; could not ascertain cause of death. Mother died quite recently, and had long been a semi-paralytic, and was once confined in an insane asylum for two years. Two aunts on

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maternal side were insane, and died in an asylum. One aunt on paternal side was insane, and in an asylum for seven years. This aunt also had one child which was deformed and feeble minded. June 23 she was taken to Harper Hospital and upon admission the following symptoms were noted. Aphasia. Pain in the left antero-parietal region,—relieved upon pressure. Ptosis of left eye, and the same eye very sensitive to light. Maniacal at times,—endeavors to injure herself, and threatens to jump into the river. Sleeplessness. Inco-ordination of speech. Idiotic aspect of countenance, and tongue almost continually protruding to the right. On account of the syphilitic history she was placed under iodide of potassium in increasing doses, until full effects of that drug were obtained. Patient was seen in consultation with Drs. H. W. Longyear and D. Inglis.

June 30, at the suggestion of Dr. Inglis, the os uteri was painted with ninety-five per cent. solution of carbolic acid.

July 13. Syphilitic treatment, local applications to the cervix, and sedative remedies having been tried and proven futile; also it being a fact that the patient was rapidly losing strength and flesh, it was determined that the only chance to save her life lay in evacuation of the uterine contents. A bougie was inserted in utero and left to await developments.

July 17. Beyond a discharge of mucous no disturbance was caused by the bougie. Upon examination under an anæsthetic, the cervix was found to be two and one-half inches long, which was very misleading in the digital examination, conveying the idea of a tumor. The cervix was dilated, and the index finger with difficulty passed into the uterus; the membranes were ruptured, and the fœtus distinctly felt. A small quantity of glycerine was injected into the cavity of the uterus and a tampon placed in the vagina, to be followed with antiseptic irrigation. Upon coming out from the influence of the anæsthetic, she had a convulsion simulating epilepsy, with opisthotonos.

July 21. Almost four days later, at 8:30 a. m., the fœtus

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and placenta came away. Here a remarkable feature of the case occurred. Apparently just as soon as the fœtus and placenta commenced to come away, the mind of the patient instantly became rational and clear. From this date the patient made a good recovery, and left the hospital on July 28 much improved, but unable to walk. A family disturbance unfortunately occurred the next day, and patient had two epileptic seizures.

August 9. She sat up in a rocking chair; mind perfectly clear; and all concurrent symptoms before mentioned have disappeared. The patient to-day is enjoying very good health, and as active as ever.

In this case there were numerous factors bearing upon it from an etiological standpoint: First, the history of syphilis; second, insanity in the family of both parents; third, a severe blow upon the head in early life, followed by an attack of insanity; and fourth, pregnancy, which alone is in itself an acknowledged factor. In considering the immediate cause of the insanity, we may eliminate the first three; and taking the fourth in conjunction with the result following the evacuation of the uterus, it may reasonably be concluded that pregnancy was the immediate factor, and the case be classed as one of insanity of pregnancy. What the ultimate result of this patient's career will be is very conjectural, but certainly the outlook is anything but bright.

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DISCUSSION.

DR. HERDMAN. The patient referred to is here with me, but as it would be a little embarrassing to appear before a large audience, I desire to have those particularly interested in this subject of trophic neuroses visit her with me in the side room. I think we have here the early stage of some one of these forms that we have been considering, and of which I have given a brief review; and I would be glad to have suggestions from those who have seen cases of that character, and particularly those who have been dealing with skin diseases and cases of nervous disorder. I will gladly invite any of those present to go with me in the side room and see this case.

DR. EDWARDS. I was very much interested in the paper of Dr. Henry just read, and I wish to speak of a somewhat similar case of an insane woman that came under my notice in the Michigan Asylum at Kalamazoo. She had been three times insane during pregnancy, and twice soon after the birth of a child she was admitted to the Michigan Asylum, and each time made a speedy and apparently complete recovery. After her last discharge and return home, she became pregnant again, and the family physician called on the asylum superintendent and physicians for advice as to the justifiability of inducing abortion to cut short another attack of insanity that seemed to be coming on. It was putting the matter of induced abortion in a new phase, but it was strongly advised against by the asylum people.

DR. INGLIS, Detroit. The thought occurred to me as Dr. Herdman was telling about his case, that it was possible that he had to do, not so much with a neurosis, as with a progressive lesion in the walls of the blood vessels themselves.

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In other words, it was an arterial disease, and not primarily a neurosis at all. If we concede that in the doctor's case there were some conditions existing in the blood which caused at first a spasm of the arteries, that would explain the transient nature of the symptoms as they occurred at first. The same condition, probably some poison circulating in the blood, persisting, would cause later on a thickening of the arterial walls, a lessening of the arterial caliber, and consequent impairment of the circulation, which would be permanent. This patient evidently had a venous stasis. The doctor described the purple discloration, or dark blue color, which came at first transiently, but which became permanent. That condition of venous stasis in itself might be sufficient to cause a greater proliferation of the connective tissue about the joints, and it might also suffice to account for the thickening of the bones. Indeed, the same poison which caused the arterial thickening might also cause the bone thickening. In short, it seems to me worthy of consideration whether the whole train of symptoms were not the results of a chronic toxæmia, rather than of a progressive nervous lesion. The question is of importance, because the recognition of the toxæmia at an early stage of the affection might in similar cases make it possible to prevent the progress of the disease. There was evidently a period when the cause was acting intermittently. If the cause had been removed at that period, the later and permanent lesions would probably never have occured.

Dr. Chas. W. Hitchcock, Detroit. I rise to make a few remarks on the paper which I read for Dr. Henry. I never had the pleasure of hearing or reading the paper until I just read it a moment ago. The case is a very interesting one containing interesting points, particularly in the return of the apparently normal mental condition after evacuation of the uterine contents. It seems to me, however, there are so many factors in this case, possibly etiological factors, of an abnormal mental condition, that we can with difficulty conclude, even in the face of the result of the treatment adopted,

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that pregnancy had necessarily any very large place as a factor in the production of this condition. There is here clearly a case of a history of insanity on both sides of the family; and the history also of injury in childhood which was followed by an attack of insanity; also all the possibilities which a specific infection carries with it; all of which would go to show together that a condition obtaining at this time with the patient was of the most exceedingly unstable neurotic temperament, and it is to be wondered at, rather than otherwise, if so severe a strain on the constitution as pregnancy should not produce an abnormal mental condition. And while pregnancy may have been the immediate or provoking cause of the disturbance, it seems to me there are many other and much more important factors in this case which are really far more responsible for the symptoms here detailed than the pregnancy itself.

DR. HERDMAN. I think the view of Dr. Inglis is in all probability the correct one as far as it is founded upon direct change in bringing about the disorder. But I think this present condition is due to some disturbance of the vaso-motor centers.

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FRIEDREICH'S ATAXIA, WITH CASES.

SIDNEY I. SMALL, M. D.,
Saginaw.

In reporting these cases of this comparatively rare disease, I do not expect to add anything original to its literature, but I am encouraged to believe that a history of the cases which have been under my observation for a considerable time, illustrated by the presence of the individuals themselves, will be of sufficient interest to claim a small share of the society's time.

I trust it will not be deemed a reflection on the dignity and erudition of this society that, before taking up the personal histories, I recite briefly the history and general course of the disease, as a reminder for those who had no special reason for its recent study, and an aid to the appreciation of the symptoms as they appear in the different stages.

The disease was first noticed in 1861 by Professor Friedreich, of Heidelberg, who at that time reported six cases. In 1876 but fourteen new cases had been reported. In 1882 the number had increased to forty-seven, and at the present time is something over two hundred. The only case which has been reported in this state was described by one of our own members, Dr. Inglis, in a paper read before this society in 1891.

For a definition of the affection, I shall quote from the excellent monograph of Dr. J. P. Crozer Griffith, as giving briefly, and yet clearly, the results of study up to the present time.

"Friedreich's ataxia is a chronic systemic inflammatory de-

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generation of the spinal cord, developing usually in infancy or childhood, and occurring in cases in which there has probably been an arrest of development of the cord during fœtal life, this being the result of some hereditary predisposition. It is situated chiefly in the posterior columns, the lateral pyramidal tracts, the direct cerebellar tracts, and the columns of Clarke, though other parts of the white and gray matter are very commonly somewhat affected, and the sclerosis extends slightly into the medulla. The affection is characterized clinically by a disturbance of the co-ordination of the bodily movements, developing gradually, advancing from below upward, and finally involving the organs of speech. Curvature of the spine, talipes, vertigo, and nystagmus are frequent. The patellar reflex is nearly always abolished. Paralysis and sensory disturbances are not uncommon in advanced cases. Trophic, vaso-motor, and visceral affections are unusual, and any involvement of the intellect is probably accidental."

It is probable that all sufferers from the disease inherit from some of their ancestors, near or remote, a tendency to degenerative processes, yet to call it hereditary we must regard the term in its broadest sense. While cases are recorded of undoubted direct, or similar inheritance, in a large majority it will be found that the ancestors suffered from some other form of nervous disease; and a certain number appear in which no sign of heredity has been discovered.

But few well marked cases have shown the first symptoms after the age of twenty years. In one hundred and twenty-seven cases tabulated by Griffeth, the first symptoms were noticed in thirty-nine before the age of six years; in forty-five at from six to ten years; in twenty at from eleven to fifteen years; in eighteen at from sixteen to twenty years; and in five at from twenty to twenty-five years.

Not unfrequently the first manifestations of the disease have been preceded by some acute affection, usually infectious.

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Clinically, Friedreich's Ataxia resembles tabes dorsalis and disseminated sclerosis. In our diagnosis we have to bear in mind the early development of Friedreich's disease; its slow, but steady progress; its tendency to occur in several members of the same family; the peculiar oscillating, staggering gait; the usual absence of the patellar reflex; the deformity of the feet; the slow, thick speech; the scoliosis, and nystagmus; the absence of pain, cerebral disturbances, and genito-urinary troubles. Tabes dorsalis is a disease of adult life, with pain as an early and common symptom, seldom affecting more than one in a family; lesions of the optic nerve are early and frequent symptoms, without curvature of the spine, or inco-ordinations of speech, and very seldom nystagmus.

Disseminated sclerosis rarely appears before the age of twenty. The onset is sudden, and but one member in a family affected. There is exaggeration of tendon reflexes, spastic paraplegia, cerebral disturbances, with vertigo, headache, and epileptiform and apoplectiform attacks.

The general pathological changes are well described in the definition quoted at the beginning.

Three of the cases which form the subject of this paper have been for a number of years inmates of St. Mary's Hospital in Saginaw. The fourth is living in Essexville, in which town all of the children were born.

In my study of the family history I find nothing of any importance on the paternal side. The father was a native of Holland, and came to this country at the age of twenty-five. He was a large, strong man, and healthy until a few years before his death, which occurred at the age of sixty-one, of gastric cancer. His father and mother died in Holland at the age of fifty-eight and fifty-two respectively. One brother is living in this state at an advanced age.

The mother of the patients, French, a native of Canada, died at thirty-eight from blood poisoning, the result of vaccination. Maternal grandfather living at eighty-five; maternal grandmother died at seventy-three. A sister, aged

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twenty-eight, is in good health, and a brother, aged sixteen, is apparently well, though inclined to stammer, and especially if at all excited; *and the patellar reflex is absent, or doubtful.*

From a maternal aunt I obtained the following personal history. She is forty-six years old, and has been married twenty-three years. Three months after marriage, being then pregnant, she took cold and had "inflammation of the lungs" which lasted several months, and for one year after recovering from this illnees she was unable to walk, and had no sensation in her legs; then she learned to walk as a child learns. Three years afterward, in her third pregnancy, she suffered an attack similar to the former, and was again unable to walk for a period of a year and a half, since which time she has been well, so she says; but when the marked kyphosis of the dorsal region developed I was unable to elicit; probably at the time of her first illness. She has had nine children, seven of whom are living. The first-born died at the age of two and a half years, never having been healthy, though I was unable to learn the immediate cause of death. The other died of diphtheria. The remaining children are well, mentally and physically. A cousin of the parents on the mother's side has a daughter of eight years, who has since the age of eight months had convulsions, and is still an infant in all but years. Three other children, of the ages of four, six, and fourteen, are in good condition physically and mentally. It may be worthy of note that their parents are slightly related—their grandmothers being half sisters.

In another branch of the family is a girl eleven years old, a distant cousin of the patients, who had hemiplegia in infancy, and still remains weak in body and mind. Eight other children, whose ages range from eight to twenty-two years, are in good health.

The following personal histories are obtained from the patients themselves and their friends.

CASE 1.—Mary V., aged twenty-six. She was in good health up to the age of thirteen years, when there appeared

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an unsteadiness in her gait, a wavering, uncertain manner of walking, with frequent falls. The patient says there was an uneasy sensation in the back, and later in the knees and ankles, though it never amounted to absolute pain. She also remembers that she was unable to stand upon a chair, or anything raised even but a little distance above the ground, and this she noticed some time—four or five years—before the trouble in walking appeared. At the age of nineteen the difficulty in walking had so far increased that she was compelled to use crutches, and after about four months was no longer able to walk even with this support. Menstruation begun at eighteen, and has been normal.

Present condition: The patient sits during the day in an armchair, in a stooping, or rather slouching position. There is some scoliosis in the dorsal region. She is unable to walk or stand, and gets about by drawing herself along the floor by the hands. With difficulty she can get from the floor to a chair. She can extend and flex the leg upon the thigh, but cannot flex the thigh upon the trunk. The feet are in the condition of talipes equinus, with a tendency to dorsal flexion of the great toe. Patellar reflex is absent, or doubtful. There is no more atrophy of the muscles than would naturally follow disuse. The muscles of the arms are fairly strong, but showing marked inco-ordination. An attempt to bring the forefingers together, or to touch the tip of the nose or the ear, is seldom successful. When the limbs have remained for some time at rest the patient is unable to tell their position except by sight.

In grasping an object the hand and fingers are held in a claw-like way, and often carried beyond and about the object before seizing it. The functions of the bladder and rectum are normal.

The speech is thick, as though some object were held in the mouth, and the words are pronounced in a slow and somewhat jerky manner. Though generally of a quiet and serious habit, the patient is subject to fits of immoderate and uncon-

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trollable laughter on slight provocation. There is no impairment of intellect or memory.

CASE 2.—Joseph W., aged twenty-five. Ataxic symptoms first noticed at the age of thirteen years, but he was able to go about and work until the age of eighteen, when he had what seems to have been an attack of typhoid fever lasting seven weeks, and after recovery he could walk only with the aid of crutches; and this aid soon became insufficient, and walking impossible.

Present condition: He is unable to walk or stand, and with great difficulty gets from the floor to a chair; and yet he goes down several flights of stairs, out of doors, and about the lawn, sliding down the stairs, and returning very slowly by seizing the balusters with his hands, and drawing himself up a step at a time. His method of locomotion is the same as that of his sister, drawing himself by the hands.

There is scoliosis in the dorsal region. He can extend and flex the legs, and flex the thigh upon the trunk. The same condition of talipes and dorsal flexion of the great toe is present as in his sister. The patellar reflex is absent; the plantar reflex well marked. There is no apparent lack of strength in the muscles of the arm and hand, but the inco-ordination is much greater than in the case of his sister; and there is the same inability to locate the position of the limbs when at rest. There is no affection of the visceral or urinary organs. There is a slight oscillation of the head, which is increased by conversation or excitement. The speech is slow and even more unsteady than in the previous case.

Memory and intellect are unimpaired.

CASE 3.—John V., aged twenty-four. The first symptoms appeared at the age of thirteen years, gradually increased, and at the age of twenty-one he gave up walking altogether after a month's use of crutches. No illness preceded and no pain accompanied the ataxia. One bit of information which he gives concerning his childhood tells of inco-ordination in the arms at an earlier relative date than is usually given.

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He could not drive a nail or use a hammer at all successfully, but always hit something different from that at which he aimed.

Present condition: Much the same as his brother, except in degree, the symptoms being slightly less marked, as might be expected from the difference in duration; *both patellar and plantar reflexes are present.*

CASE 4.—Julia V., aged twenty-two. Was in good health previous to the first appearance of the difficulty in walking at the age of fourteen. Never had any pain—not even a headache—and even now, when sitting in a chair, feels as though she could get up and walk as well as anyone. Menstruation began at eighteen, and has been normal.

Present condition: She has a healthy appearance and inintelligent expression. She walks only by the aid of a chair, but is constantly engaged in work about the house, and is happiest when she is busy. The ataxia is greater in the right leg. In both feet, but more marked in the right, is a condition of talipes, or rather an appearance of exaggeration in the arch of the foot at the expense of its length. This is more noticeable than in any of the others. The patellar reflex is absent; plantar reflex normal.

A point which I have noticed in all of these cases is a tendency to hyper-extension of the thumbs.

In no one of them has there been pain, anæsthesia, or girdle sensation, and nystagmus has not appeared as a prominent symptom.

An examination of the eyes of Cases 1, 2, and 3, by Dr. D. B. Cornell discovers some atrophy of the optic nerve in each case. Accommodation, pupillary reflex, and color sense are normal.

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DISCUSSION OF DR. SMALL'S PAPER.

THE CHAIRMAN, DR. CLARK. Are there any of those lightning pains noticed in locomotor ataxia?

DR. SMALL. No, sir; never.

DR. HERDMAN. Now the distinction between locomotor ataxia and Friedreich's ataxia are very sharply brought out in these cases. Usually you have in the former some paresis of the bowels, and some paresis of the bladder. In none of these cases have you any. Lightning pains are common in locomotor ataxia; they are not present in these cases. One of the most constant symptoms of locomotor ataxia is the failure to respond to flexure; it is not regarded, as a rule, in Friedreich's ataxia.

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MULTIPLE PIGMENTED SARCOMA CUTIS, OR MYCOSIS FUNGOIDES: WHICH?

W. F. BREAKEY, M. D.
Ann Arbor.

The following memoranda of the patient's statements are taken from the records of the Clinic for Diseases of the Skin and Syphilis at the University Hospital.

Mrs. M., admitted April 28, 1894, of Scotch nativity, age thirty-five; married nine years; came from Glasgow six years ago in good health. Father died at sixty-four of disease of the kidneys and dropsy. Mother died at sixty-two of bronchitis. One sister living at twenty-nine in good health. Two sisters died, one at four of scarlet fever, and one in infancy of measles. One brother died at ten of typhus fever. The patient knows nothing about her uncles or aunts or grandparents.

Patient has four living children. She has not been well since the birth of the fourth child, in June, 1891. Her last babe, born in September, 1893, lived only two months, but showed no skin lesions.

The first appearance of any disease of the patient's skin was in October, 1892, beginning on the hands, described by her as "spots," "cracks" and "scales," and "lumps." The affected spots were dark in color, some of them disappearing before the "lumps" came. The lumps appeared first upon the arms and then on the knees. "Some quite large lumps went away without breaking."

She was treated two years ago for disease of the uterus by

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FIG. 1.— Multiple pigmented sarcoma. Showing the general distribution of the tumors.

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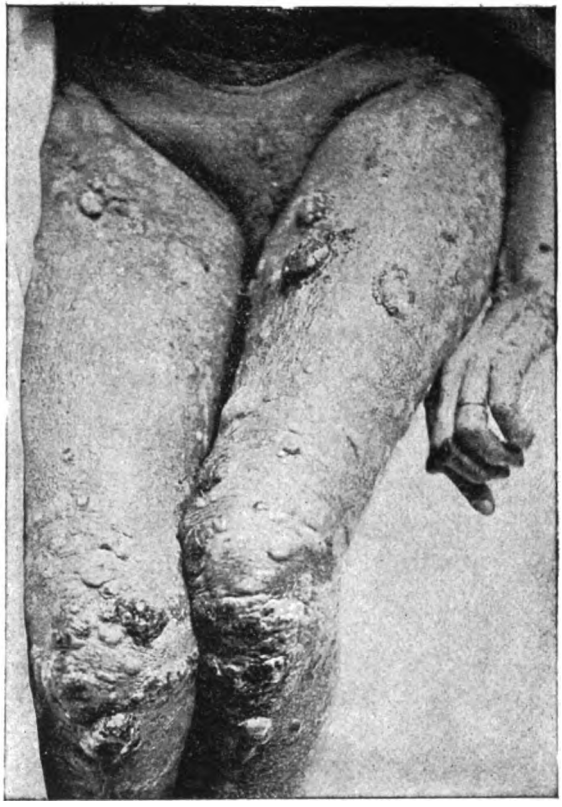

FIG. 2.—Multiple pigmented sarcoma. An enlarged view of a portion of Fig 1.

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Dr. W. J. McHench, of Brighton, who also removed her right eye in November, 1893.

She was brought to the hospital by Dr. J. N. Swartz, of Hamburg. Her temperature, taken the same afternoon, was 104.5, pulse rapid and feeble, and respiration labored.

Her appearance was pitiful indeed. Her clothing was adherent to the broken surface of many of the elevated nodular tumors, some of which were broken down and exuding a sticky liquid, apparently serous, and slightly discolored by the admixture of blood. These nodules were also present on the mucous borders of the lips and genitals. There was no true ulceration as such.

The skin, where not moistened by this discharge, was dry, thick, of an almost board-like hardness, and of a dark, swarthy color. The feet and lower legs presented an elephantiasic appearance, the hands distorted and crippled by the number and size of the nodules. There was a marked offensive odor from the breaking down of the tumors and the discharge. There were pain and tenderness in the growths, which in some places were like rough plaques of elevated, thickened, horny plates, and in other places conical tumors of all dimensions from papules to egg-size. In other places the skin had a drawn, shrunken, mummy-like appearance, its mobility being greatly lessened; and the face—its features distorted by tumors and the loss of an eye—gave an indescribable expression, or lack of expression, sad to behold, which the accompanying photographs, taken a few days later, fail to reproduce.

Some opinion had been given, before a thorough examination had been made, that the case was leprosy, and a corresponding degree of excitement among the laity was caused. There was enough resemblance in the nodules of the face and extremities, and in the elephantiasis of the feet, to lead several physicians who had seen numerous cases of leprosy to think it might be a case of that disease. There was also slight anæsthesia, which had continued for about six weeks, on the

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inner side of the right thigh at about the middle, over an area of one to two inches laterally by five or six longitudinally.

The history, however, of rapid growth, and pain, and the lack of dismembership of extremities, excluded leprosy; and the diagnosis, made from the history and physical characteristics, of sarcoma, was confirmed by microscopical examination, by Professor Gibbes, of tissue taken from tumors on the back and thigh, showing round-celled sarcomatous growth.

The patient was first washed with an antiseptic bichloride of mercury solution of one to two thousand, and next annointed with a mixture of olive oil, three ounces, carbolic acid, one-half dram, and given a tonic of tinctura ferri chloridi with nux vomica; also quiniæ sulph., and a generous diet.

During the week that she remained in the hospital some small tumors grew to the size of hazelnuts, and others of that size almost wholly disappeared. The temperature came down to nearly normal, and her appetite and digestion somewhat improved; but so little encouragement could be given as to permanent gain that she returned to her home May 4th.

The following letter from Dr. McHench, written about a month after she left the hospital, furnishes additional data as to her history and condition.

BRIGHTON, Mich., June 4, 1892.

DEAR DOCTOR BREAKEY—I have no minutes of Mrs. M's case, but by referring to my book I was reminded of most that had occurred from prescriptions and dates. I have given you as full a history of the case as I can.

Yours truly,

W. J. MCHENCH.

"Mrs. M. Family history good as far as I can learn, and previous to her present illness has had no severe sickness.

"During the year of 1892 I treated her for uterine disease, and about the last of November, 1892, I prescribed for an eczema of her hands, which soon spread to other parts of her body and continued for several months, and I think still exists. While suffering from the eczema there appeared upon

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FIG. 3 —Multiple pigmented sarcoma.
Showing elephantiasis-like condition of the feet.

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FIG. 4.—Multiple pigmented sarcoma, showing tumors of the hands.

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FIG. 3 —Multiple pigmented sarcoma.
Showing elephantiasis-like condition of the feet.

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FIG. 4.—Multiple pigmented sarcoma, showing tumors of the hands.

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the body many colored spots and elevated rings, together with many small skin tumors which are now seen on her body, and I began to think my case was one of erythema multiforme. These various colored spots and rings soon disappeared, with the exception of the dark color of the skin and the numerous small skin tumors, and then the thought struck me that I might have a case of sarcoma, but I made no microscopical examination as she did not like to have the knife used on them.

"She was confined on the second of September. The child appeared healthy, but did not do well until taken by one of neighbors and cared for a short time; but it died soon after being returned to its parents.

"The eyes became involved some time in August, and in one she suffered much pain, and ulcers soon appeared in the cornea which soon opened to the anterior chamber with the discharge of the aqueous humor. The other eye did well until the last of August, when symptoms of failure, and the severe pain of the first, induced me to enucleate to save the second eye, which was done on the fifth of November.

"These tumors of the skin increased in size and number up to the date that you saw her, and for the last few weeks her health failed quite fast.

"I saw her yesterday, and find quite an improvement. Many of the ulcerated tumors are nearly gone, and others are growing smaller. The color of the skin is much better. Some parts of the face are getting quite natural. She eats well and is taking on flesh, sits up much of the time, and is able to walk about the house, and seems quite cheerful."

The further letter of Dr. Swartz completes the history of the case so far as I am able to give it. Unfortunately no post-mortem was held nor tissue secured for deliberate examination.

HAMBURG, Mich.; Nov. 24, '94.

Dr. W. F. Breakey, Ann Arbor, Mich.

MY DEAR DOCTOR:—Yours received. With reference to

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case of Mrs. ——, I cannot add very much more information to her history. I saw her but a few times after her return; as the distance was so great to her home I asked Dr. McHench, of Brighton, to kindly look after. However, under your advice as to treatment, she seemingly showed marked improvement, strength increased, and the tumors diminished in size. Her face became covered with an eczematous eruption, and skin became very dark, quite suggestive of disease of suprarenal capsules. In August a very large abscess developed in the right groin, which Dr. McHench opened the twenty-first, from which a pint or more of *very* offensive pus was instantly discharged. Soon after this abscesses formed in each axilla; emaciation was very marked, and death ensued about October 8th.

Hoping these few brief facts will aid you, I remain,

Yours very respectfully,

J. N. SWARTZ.

The purpose of this paper is to report the history, so far as it could be obtained, of a somewhat rare and unique case, (being fortunate in securing, through the services of Dr. Hall, fairly good photographs), rather than to discuss the pathology in general or differential of sarcoma.

It would take us quite beyond the scope and limits of this paper to consider in detail the various opinions within even the last five to ten years of the physical characteristics and pathology of sarcoma.

It will be appropriate, however, to take a cursory view of a few of the conspicuous points showing the transitional or evolutionary changes in the standard and current literature on the subject.

In presenting this I quote substantially from Akerman Auspitz, Councilman, Crocker, Durhing, Funk, Foster, Hardaway, Hyde, Kaposi, Kœbner, Paget, VanHarlingen, Virchow, Filden, and others.

Without comparing immaterial differences, Foster's definition will be accepted, that "Sarcomas are always formed from

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the mesoblest, i. e., from connective tissue in its largest sense."

Sarcoma of the skin grows usually from its deeper portions, and occurs in the form of isolated, clustered, or confluent tumors of various sizes and of somewhat fleshy consistence. While it may be primary in the skin, it is more often due to metastasis from other parts or organs, and tends to general invasion of glands and internal organs. It may or may not be pigmented, and the latter may be melanotic, (the most common form starting from a pigmented mole or nævus, or from the back or sides of the hands, or from the feet or genitals), or the more rare "Idiopathic Multiple Pigmented Sercoma," which Kaposi is credited with first describing, (though both Korte and Kœbner had reported cases a year before Kaposi brought the subject permanently before the medical world) and which more immediately concerns us here as the diagnosis given to the case reported.

This so-called pigmentation, however, is due to hemorrhages into the skin, and Perrin, (who collected fifty-four cases, and carefully studied sarcoma of the skin, publishing an excellent monograph in 1886), for this reason places it among the non-pigmented sarcoma.

Hyde calls the condition "generalized primary non-melanotic sarcoma of the skin." Cases have been reported also by Videl, Wigglesworth, Daniver, Hardaway, McKenzie, and others. Funk gives many exceptional cases and many of mild type. The idiopathic form also begins as a rule in the hands and feet, and extends to the forearms and legs, then to the arms and thighs, reaching the trunk and face in two or three years. The tumors are roundish, shot to bean size or larger, reddish-brown or bluish-red, disseminated or grouped, painful and tender, never ulcerating (according to Crocker). They may ulcerate according to Morrow, VanHarlingen, and others; they have a marked inaptitude for ulceration according to Hyde. The older tumors undergo disintegration or absorption; or the center only may undergo involution with desqua-

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mation of the epidermis, leaving dark, pigmented spots and cicatrices.

Funk says in some cases a diffuse, elephantiasis-like thickening of the extremities, especially of the legs, occurs to such a degree as to make the limbs distorted and stiff, and when the hands are also affected the patient is helplessly crippled. When the trunk is affected the whole cutaneous surface may be involved, the skin and subcutaneous tissue are intensely infiltrated, hard as a board, immovable, with nodular surface, and of a dark violet-brown color.

Hyde calls attention to the fact that these tumors are fewer in number and smaller in size as they spread from the distal to the proximal parts of the limb. Crocker says erosions occur on the surface of the tumors, exposing a blood-infiltrated tissue, which may become watery or fungoid from irritation, and hemorrhage occurs frequently from the dilated vessels near the nodules. The foregoing description might have been written for this case. According to Funk the neoplasms of the mucous membranes break down still more quickly than on cutaneous surfaces. Post-mortem examinations reveal similar tumors in the viscera, particularly in the descending colon where they tend to slough.

The disease extends by metastasis to the internal organs. (Councilman calls attention to the fact that the path of the metastasis is almost always along the blood vessels, the sarcoma in this case again contrasting with the carcinoma in which metastasis follows the lymphatics.)

Marasmus, cachexia, or sepsis mark the rapid progress of this stage, and hasten the well-nigh inevitably fatal termination in from three to five years, though young persons may succumb in the first or second year, while older people have survived the ravages of the disease from six to twelve years, and a few recoveries have been recorded. Funk and Hardaway report the complete recovery of a case, and McKenzie's case recovered even after the amputation of a leg.

The discrepancies in this somewhat wide range of opinions

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of the conditions and severity of the disease may perhaps be explained in part by the probability that different authors have described the characteristics of the cases which they have seen, which have varied in gravity, in stage of development, and in individual peculiarities. Councilman says the growth and the general clinical characteristics of the sarcomata are so different in the several forms that we can find in this group of tumors representatives of completely benign as well as of the most malignant growths; in this regard the separate varieties of the tumor have individual characteristics. The pigmented sarcoma may be regarded as the most malignant of tumors, not only on account of its local destructiveness and rapid growth, but also from its tendency to form metastases. The benign period of the growth of a sarcoma is shown by its slow and circumscribed growth. In this early benign period the entire tumor is often enclosed by a connective tissue capsule. The clinical importance of a sarcoma does not depend altogether upon the histological structure. The power of the sarcoma to produce secondary metastatic nodules in the most different organs is not confined to any special species, though some show a much more decided tendency in this direction than others. In some cases the secondary nodules are of such small size, and appear in so many places in the body, that the condition is known as sarcomatosis.

In diagnosis this form of sarcoma is to be differentiated from fibroma, epithelioma, gummata, lupus, palmar and planter syphilides, tuberculosis cutis, from mycosis fungoides, and from lepra. The ease or difficulty of diagnosis must depend much upon the stage of the development. In the limited opportunities I have had for comparison, it seems to me that of all these similar diseases—including "Kaposi's lymphoderma perniciosa," as well as what Foster calls the granulomata of the skin, the chronic infectious dermatoses—sarcoma cutis is most likely to be confounded with mycosis fungoides. Multiple pigmented sarcoma may be differentiated from lupus

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by its more rapid evolution and lack of ulceration, as well as by its history, and the number and location of lesions, and by microscopical examination. Syphilis ought to be detected by the number, appearances, and size of its lesions, as also by its history, tendency to spontaneous improvement in the early stage, and curability by proper and specific treatment. Some rare forms of lepra do, indeed, suggest sarcoma, but the history, and the presence or absence of hyperæsthesia or anæsthesi, bullous lesions, and deforming mutilations in the advanced stage, will usually determine the diagnosis. Fibromata and epithelioma should be comparatively easily recognized.

But mycosis fungoides and multiple pigmented sarcoma have many symptoms in common; both are rare. The facts as to prevalence, age, and sex, even infection and micrococci, are not so positively determined as to leave no room for doubt.

The diagnosis made from the history and physical appearances was confirmed by microscopical examination. Yet, while the physical characteristics of pigmented multiple sarcoma cutis were present in the condition of the skin, and in most of the tumors, and while the microscope showed round celled sarcoma, still there was enough doubt in the case to raise the question, "Was this only generalized sarcoma? Was there mycosis or granuloma fungoides, or is there a mixed type? May mycosis fungoides occur coincidently with sarcoma, or develop particularly in the broken down nodules?"

Hardaway says a case reported by himself some years ago under the title of "Multiple Tumors of the Skin, Accompanied by Intense Pruritis," is regarded by some as an example of mycosis fungoides, but adds that if the case represented this affection it is worthy of note that, at the date of observation, 1880, the disease had already existed for twenty-one years. His description of the history and physical characteristics of mycosis fungoides corresponds very closely with sarcoma cutis.

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Perrin, Funk, and others regarded mycosis fungoides as a species of sarcoma of the skin.

Under the title of "Inflammatory Fungoid Neoplasm," Duhring and Geber have described a disease of the skin closely related to sarcoma, in which both spontaneous involution and ulceration may occur.

From a very brief and incomplete history of this case, and inspection of the photographs of the subject of this report, Duhring expressed the opinion that the case seems to have much in common with granuloma fungoides, and that it would be proper to exclude that disease before regarding it as sarcoma; also that the microscope is hardly sufficient in itself to determine the diagnosis.

Yet it would seem that the diagnosis of granuloma could only be determined by the microscope. Hyde says the diagnosis of sarcoma rests upon the microscopical examination of the new growth in every case.

The micro-organisms of mycosis fungoides have been recognized by Reidfleisch, Auspitz, Hochsinger and Schiff; also by Firket, of Liege, who reported a case illustrated by photographs, in which micrococci were recognized.

Tilden, however, in a very full monograph under the title of "So-called Mycosis Fungoides," makes a report of thirty cases (twenty-three patients were males and seven females), and sixteen deaths. More than half the whole number were over forty years of age. Tilden found no micrococci in the case examined, and doubted their existence, and calls attention to the fact that Reidfleisch and Auspitz, both within the same year, by the same methods found micro-organisms in pathological products of mycosis similar to those found in lepra, lupus, tubercle, and syphilis, but materially disagreed as to the tissues in which they were found. Van Harlingen states that the existence of the coccus detected by Reidfleisch has not been confirmed by other observers.

Hyde, however, thinks there is now little question as to the infectious character of mycosis, and that it is probably

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produced by a specific micro-organism. But Tilden says there is no instance of the malady occurring in more than one member of the same family.

Councilman emphasizes the distinction that all granulation processes tend to the formation of tissue. In sarcoma there is no tendency to the formation of tissue, but simply to an increase in the number of cells.

Van Harlingen, speaking of mycosis, says the diagnosis is extremely difficult, if not impossible, and that sarcoma of the skin is the affection with which mycosis has been most frequently confounded, and many undoubted cases of mycosis may be found described under the designation of sarcoma. However, the fact that sarcomatous tumors are never preceded by eczematous or "lichenoid" congestive eruptions, that the color of the skin is but little changed, that there is no itching, but that there is pain, and that there is no resorption, the tumors disappearing only by ulceration (?), all point to a marked clinical difference between the diseases.

Moreover, the evolution of mycosis is more rapid, and neither sarcoma, epithelioma, nor carcinoma give rise with such rapidity to voluminous, soft, brick-red tumors, like raspberries or tomatoes; also microscopical examination of a tumor will show the presence of lymphatic globules, and the peculiar reticulum characteristic of mycosis.

From the foregoing opinions which fairly represent authorities it will be seen that the differential diagnosis of "idiopathic, pigmented, multiple sarcoma of the skin" and "mycosis fungoides" is neither easily nor certainly determined as yet by standards heretofore accepted as established.

Since writing the foregoing, two days ago, the following case was sent me by F. N. Dewey, of Plymouth, Mich. It supplements the first one in so many particulars, and illustrates so many of the physical characteristics of mycosis fungoides—while the microscopical examination made by Professor Dock shows sarcoma cells only—as to exhibit a valuable contrast, whether the two cases be regarded as the same

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FIG 5.

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Fig. 6.

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or different diseases; and I therefore add a hasty memorandum of the case so far as it can be reported now.

Mrs. S., aged fifty-six; Prussian; married thirty-one years; mother of two children; housekeeper on a farm; no hereditary or specific trouble known in family; had some trouble or injury at childbirth (gave birth to twins over twenty years ago) and subsequent treatment.

The first appearance of skin lesions was six years ago, at the beginning of the menopause, on the backs of the hands and feet, first "red spots," no "pimples," which gradually spread all over the body, sometimes scaly, always itching, never ulcerating.

These spots nearly all disappeared in the course of about two years, and the patient remained almost well for the next two years. Then the "spots broke out" again, nearly over the whole body at once, and have been better and worse since. The growths were more numerous and larger, she thinks, about two or three months ago than at any time, and caused her more distress.

Many of these large tumors have grown in from two days to two weeks time; and other tumors, half the size and thickness of the hand, have disappeared in a week.

Patient has better health now than a month or two ago. She does considerable outdoor work, takes care of chickens, and milks a cow. Her hands have never been disabled for work. Her wrists and forearms, feet and legs, show erythematous spots, becoming elevated, nodular tumors as they approach the elbows or knees, not tender, nor painful. There are some stains and scaly spots on the wrists, feet, and legs, and other parts of body where the lesions have almost wholly disappeared. "A boil" or some soft tumor in the bend of the left elbow was cut open last summer and gave exit to a bloody discharge. There is now an irregular, multiple, nodular mass in the same place, deeply fissured across in the bend of the elbow, and exuding a serous discharge. Some few others of the tumors, more elevated or more exposed to friction, show

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erosions, from which reddened hyperæmic surfaces a more bloody oozing is going on.

There are enormously large, multiple, nodular masses in the axillae, in the groins involving the glands, on the thighs and lateral parts of the lower abdomen; and the back of the chest and trunk are almost covered with elevated, flattened, oval or loaf-shaped tumors from the size of a finger nail to the palm of the hand, elevated one-quarter to three-quarters of an inch from the surface. A small section removed from the back showed round celled sarcoma. Some seborrhœa with numerous small comedones were found in regions near the tumors.

The specimen of tissue examined was very small, and insufficient for thorough examination. It is hoped that facilities for a further examination may be had, and the patient kept under observation so as to procure subsequent history.

The salient points of difference in physical conditions—patent at a glance at the photographs—are the great number and size and nodular character of the tumors on the extremeties in the first case; the elephantiasic like condition of the feet and lower legs; the dry, hard, darker colored skin; the tenderness and pain; the shorter history and more rapid progress of the disease; the absence of tumors on the extremities of the second case, though there had been papules, vesicles, and small nodules on the feet, leaving scales and large macular cicatrices; the absence of pain or much tenderness, but the presence of constant pruritis; the more flattened shape of the tumors, and the marked prominence of the glandular involvement; the soft, reddish color of the tumors; the moist condition or lack of dryness of the skin; and the ability of the patient to be on foot and do as much work with her hands.

The points of resemblance are the facts of both beginning in the hands and feet; the spontaneous improvement at times, and retrogression; the rapid growth of the tumors; the

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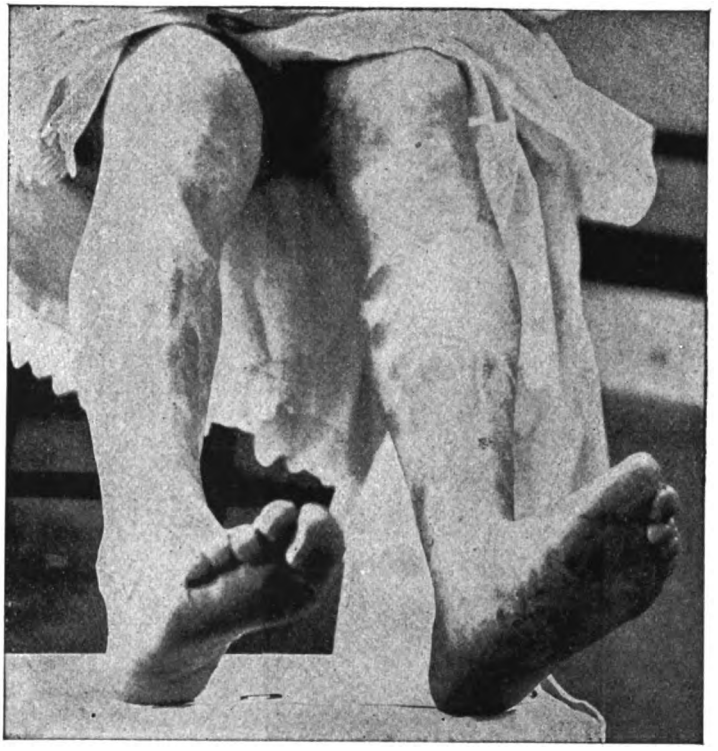

FIG. 7.

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equally rapid resorption, involution or disintegration, and the absence of anything like typical ulceration.

Should the diagnosis of the latter case be made now on the physical conditions and history, it would be called, I think, mycosis. Should it be made on the microscope alone, it must be sarcoma, unless we accept a mixed variety. Trusting to reach a more satisfactory determination by further observation, and as it will make no difference in treatment, the diagnosis is held open.

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SALICYLIC ACID IN PLEURISY AND OTHER DISEASES WITH SEROUS EFFUSION.

GEORGE DOCK, M. D.
Ann Arbor.

Several years ago I called attention (Therapeutic Gazette, February, 1893) to the use of salicylic acid and its compounds in the treatment of pleurisy with effusion. At that time my own experience with the method was limited, and the plea I made for its wider use was based largely on the reports of others. Since then I have had a greater experience, and feel that the time has come when the results may profitably be communicated to others. I shall not quote from the growing literature of the subject, but simply say that my own article has been widely quoted, often with statements as to the value of the method, and that salicylates are recommended highly, indeed given first place, in three of the most extensive works on internal medicine published within the last two years. I refer to "Traite de Medicine," published under the direction of Charcot and Bouchard; Nothnag's "Specielle Pathologie und Therapie;" and the "Handbuch der Speciellen Therapie Innerer Krankheiten." I may also add that Dr. George de Schweinitz has used salicylates in detachment of the retina, on the theory that the process is similar to that in pleurisy, and so far with encouraging results.

I shall not detail histories of cases treated by salicylic acid, but give the general results as a commentary on the statements given as conclusions in my former article. That salicylic acid and its salts are among the most effectual agents in the treatment of pleurisy with effusion follows from the fact that

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in all of the six cases successfully treated since my former article no other treatment was used, except in one case. This was one of peracute pleurisy with effusion reaching to the second rib (left side) at the time of my first visit. Salol was begun in full doses, but owing to the theoretical objections of the patient (a physician) was discontinued after the third day. The effusion went down rapidly for a few days, but then remained at a standstill for about a month, forming a small area of dullness in the left axilla. This was removed by the aspirator, the amount being less than six ounces.

"In effective doses the remedy is harmless, and with proper selection of the preparation, and care in administration, causes little or no discomfort to the patient." With the exception of the case just cited, I have seen none in which the salicylate could not be used. Recently I have used the acid alone, and have been agreeably surprised to find it well borne by the stomach, even in very large doses. I have intentionally given it in a number of cases in very large doses without unpleasant symptoms. In two cases, after very large quantities (eight grammes a day for several days) were taken, a few red blood corpuscles appeared in the urine, and in one, renal epithelium, but without other evidence of intoxication, or of serious effect on the kidney. In all cases taking salicylic acid careful examinations of the centrifugated, freshly-passed urine have been made at short intervals, in order to discover the earliest evidence of untoward effect.

One great advantage of the salicylic method is that it can be given from the earliest stages, since it acts advantageously on such symptoms as pain and fever. It is in such cases that the most marked results are seen, but even in long standing effusions rapid removal of the fluid is often observed.

Whether the remedy acts as well in tuberculous pleurisy with serous effusion I cannot tell from my own experience, as none of the cases treated had evidence of tuberculosis; and although two cases excited suspicion of tuberculosis, they

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have not as yet (after two years and a half and two years) shown other evidence of tuberculosis.

In suppurative effusions the method should not be used.

How the remedy acts is difficult to say. The diuretic effect mentioned before has always been present in my cases. When I wrote before on the subject I was not aware of the interesting experiments of Rosebach, and Pohl (Berliner Klin, Wochenschrift, 1890, No. 36). These observers found that salicylic acid early found its way into the joint and other serous cavities, especially the pleura and peritoneum, being found there soon after it was introduced into the body. Iodide of potassium did not undergo this peculiar selective excretion. In pleurisy, when both iodide and salicylate were given, the salicylate was found in the exudate, but not the iodide. In all my cases of pleurisy with effusion in which salicylate were given I found the acid in the exudate at an early period. If, as is almost certain, pleurisy is due to the local action of micro-organisms, the presence of salicylic acid in the effusion may be readily believed to have an influence on them. At all events, the existence of this selective action of the drug is an interesting one, worthy of further investigation.

I wish to call attention again to the fact that the salicylic method does not act by producing sweating, or by depressing the circulation. Sweating is common in untreated pleurisy, but it has seemed to me that in cases treated by salicylates there was less sweating than usual. Often it was not perceptible. Not only is depression of the heart's action not necessary in the treatment with salicylates, but it is undesirable, and this leads to an important point, namely, that in using this remedy the patients should not be treated by purgation, nor by low or dry diet. Full diet, with plenty of milk, is perhaps the best. The diuretic action of the milk I have found by comparative tests not to be the cause of the absorption.

In using the salicylates it is necessary first to determine the

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presence of a serous effusion. This should always be done by aspiration, as the symptoms are not always to be relied on. If there is fever the patient should be put to bed. Salicyclic acid, or a salt, should be given in the dose of from four to eight grammes (one to two drams) in twenty-four hours. This should be given for two or three days, and then on alternate days, as suggested by Aufrecht, in order to prevent the possibility of the patient absorbing a dangerous amount. The usual precautions must be taken in order to avoid dangerous results. Especially should the condition of the kidneys be examined before giving the remedy. Usually it is not safe to give salicylic acid to patients with nephritis, although as regards chronic parenchymatous inflammation this is not always true. As a rule I let the patient go twenty-four hours without any treatment, or with the simplest symptomatic treatment, and measure all the urine passed in twenty-four hours. The measurement is then continued daily, and the urine examined microscopically and chemically. The conditions in the chest as to the amount of effusion, position and strength of heart, etc., are to be observed daily.

Salicylic acid I have found promptly efficient in a case of pericarditis with very large effusion, after blistering had had no effect. I have also used it in cases of serous effusion into the joints in which removal of fluid promptly followed.

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RHEUMATISM: ITS PATHOLOGY AND MODERN TREATMENT.

E. S. PETTYJOHN, M. D.
Alma

Owing to the lack of definite etiological or anatomical basis for the classification of rheumatism as a disease, its study as yet is one largely of symtomatology.

Scudamore holds that rheumatism is a disease external to the system, which itself becomes affected in a secondary manner by sympathy, but in turn reflects back its influence upon the external parts. He says we may view the effect in the light of a common inflammation modified by the exciting cause (cold), and by the influence of the particular textures affected.

Another theory is that the symptoms of rheumatism are set in motion by the abstraction of heat, which produces contraction of the superficial vessels succeeded by dilatation and afflux of blood to the parts, dilation being maintained long enough to result in inflammation. But the capillaries are non-muscular, and the regulation of their blood supply is by nerve action.

Dr. J. K. Mitchell believes that rheumatism has its origin in the medulla spinalis, and depends upon irritation of that organ.

Prout first suggested that the absorption of lactic acid was the cause of derangement of the secondary assimilating powers, and produced rheumatism, catarrh, and ague according to exposure to various influences combined with diatheses. This is also supported by Richardson, Todd, and Haig. A later view of the same theory as promulgated by Senator is

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that the acid is developed in the muscles of activity, and that a chill causes a retention of this acid with other effete material, which produces rheumatism. While lactic acid is found in excess in the blood in this disease, Dr. MacLagan holds that this excess is a result of increased metamorphosis of glucose (the non-nitrogenous tissue element of the motor apparatus) as a product of the effect of the rheumatic poison on the fibrous textures of the joints. He holds the miasmatic theory of rheumatism, and believes the disease to be almost analagous to malaria. He charges the bacillus malariæ with the crime of generating both ague and rheumatism. Bertolon and Pell regard a distinct connection between rheumatism and malaria, the latter stating that in Amsterdam, in the years when malaria is prevalent, there is little rheumatism, and vice versa.

Still another view is that rheumatism arises from a profound disturbance of the heat-regulating apparatus which especially affects the muscular system, causing the heat to be generated without work; one of the consequences being that impressions of pain are conveyed to the brain by the articular nerves instead of by work performed. There must be retention of heat to account for rise of temperature, but it is not the heat of work done.

A careful study of the theories just mentioned as to the cause of the group of phenomena called rheumatism will determine that each has some element of truth, supported by experimentation and clinical observation.

The belief that rheumatism is an infectious disease produced by bacteria, is the true one, and is rapidly gaining credence. Rheumatism is intimately related to other infectious diseases, especially malaria, endocarditis, meningitis, and chorea, and eventuates in neuroses. It frequently occurs in epidemics, as reported by Erichorst, from the hospital at Zurich, and by Pel, of Amsterdam, who cites a case of a patient who was removed to a bed between two others suffering with rheumatic fever. She, never having had rheumatism, was

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attacked with it coincidently with a relapse of the disease in five other patients.

Similar cases are mentioned by Schafer, Salisbury, and Thorensen, the latter having observed the spread of the disease by personal contact, as Sawyer observed malaria.

Edelfsen states that in Kiel it is a house disease, like fibrinous pneumonia and typhoid fever. He reports 728 cases occurring in 492 houses. Muller has shown that the disease does not occur within a few hours after exposure, but that it has a *prodromal* period, as in other infectious diseases, and that often the fever precedes by days the articular and other symptoms.

The schizomycete or bacterium which produces rheumatism is taken into the blood, where its action or presence is responsible for the rapid diminution of the red corpuscles, by robbing them of their oxygen, and the greater increase of the white blood corpuscles; also for the increase of the fibrin from three to seven or eight parts to the thousand. The infectious organism seeks the white fibrinous tissue and the serous tissue of the motor apparatus, because here it finds the best medium for growth and development. The schizomycete acts as a local irritant wherever it lodges. It alters the constituents of the blood stream, which it fills with more of its kind. The parts inflamed form favorable media for the rapid multiplication of the schizomycete, and the contaminated blood carries them along to produce results elsewhere. I believe all the phenomena of this disease and its sequelæ are the result of the morbid state of the blood produced by the presence of the offending schizomycete and its products. I am persuaded that two or more deleterious schizomycete may exist at the same time time in the system, as in the case of phthisis where intercurrent attacks of rheumatism occur, or where we have pneumonia in a patient with anthrax. While there are millions of microbes in food, the water and air, and in the blood; and while the blood itself has power to diminish and even destroy by the million various bacilli in a few hours,

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even the typhoid bacillus as shown by Fedor; and while the streptococcus pyogenes of Rosenbach is harmless in healthy saliva so long as the epithelium is intact, each of these same bacteria may produce death.

Careful post-mortem examinations have failed to find altogether adequate lesions explaining the morbid symptoms of rheumatism. Hemorrhages have been found in the mediastinum, endocardium, pericardium, spleen, pleura, in the meninges, and peritoneum; also cloudy swelling of the kidneys, liver, and heart, with injection of synovial membranes, and erosion of cartilages, and many morbid states producing positive proof of an infectious process.

The exact schizomycete of rheumatism has not yet been found, but proofs are sufficient to warrant thorough experimental research, to isolate, cultivate, inoculate, and demonstrate the constant presence and the positive identity of the micro-organism of rheumatism.

However much we disagree in theory, we may all agree as to the clinical history of rheumatism, namely, that it is hereditary in twenty-five per cent. of the cases; that it is a disease of youth, especially between the ages of fifteen and thirty years; that those exposed to the weather and bad air, and who are poorly nourished, are especially liable to suffer from this disease; that it is prevalent in warm and temperate climates, and near the sea coast; that there is greater liability, other things being equal, of its re-occurrence in those who have once been afflicted.

An attack is usually ushered in by a chill or rigor, followed by feverishness, stiffness, or pain (which soon becomes intense) in one or more red, swollen, tender joints. This is accompanied by perspiration and prostration. The patient is helpless and restless. The face is flushed; the pupils dilated; the whole body is hot, and bathed in sour smelling perspiration. The temperature is 100° to 105° F.; the pulse rapid, full, and soft. The tongue is covered with yellow fur; there is thirst, anorexia, and constipation. The urine is diminished, dark red, and of

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high specific gravity, highly acid, and often contains albumin. The inflammation, with all its accompaniments, migrates from joint to joint, from sheath to tendon, synovial membrane to periosteum, from endocardium to neurilemma, always announcing its arrival by some or all of the phenomena known of that condition. The duration is from a few days to weeks, or years. The results are: Joints stiff or anchylosed, or nodulated; changes in sheath, tendons, ligaments, periosteum, endocardium, pericardium, valves, heart muscles, synovial membrane, and neurilemma, with a medley of morbid conditions as a result, such as hæmaturia, paraplegia, paralysis of the bladder (from implication of the spinal cord), hemiplegia, monoplegia (from cerebral disease), chorea, melancholia, insanity, and inbecility.

Few diseases have had so many recommended remedies and vaunted specifics for their alleviation as rheumatism. Nevertheless, there are certain well-recognized principles of treatment directly applicable in this disease. The treatment differs in the acute and chronic form of the disease only in degree, duration, and detail.

We must alleviate pain, reduce temperature, open the emunctories of the system, rid it of the materies morbi that it contains as partly the cause, partly the result, of the systemic disturbances. The patient's room should be large, well aired, and one where the sun shine is a daily visitor. The air should be at an even temperature of 75° F. Two beds should be used, one during the day and the other during the night. No linen should touch the skin, and the patient should wear woolen undergarments night and day during and always subsequent to an attack, a light weight for summer, medium weight for winter. I am certain that people wear too heavy undergarments in winter, and too thin in summer. Absolute rest of mind, body, and eyes should be enjoined.

Affected joints should be enveloped in wool kept in position by a light bandage. If not greatly swollen a plaster of paris bandage should be applied, the limb elevated, and the

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joint immobilized. Opiate lotions, evaporation being prevented by oil-silk, are to be used when the capsular ligament of the joint resists expansion and the plaster bandage is not used. Blistering, bleeding, leeching, and cupping, as practiced by Sydenham, are replaced by general remedies indicated, combined with antiseptics, alteratives, laxatives, diuretics, and tonics. The diet should consist of liquid food and custards, lemonade, citrate of potassium in solution, and other acid and cooling drinks, along with an abundance of water, effervescing waters, koumyss, matzoon, and milk. In extreme hyperpyrexia, uncontrolled by moderate doses of drugs, the cold bath, in which the water is cooled rapidly but gradually down from 94° F., to 68° F., should be used, its effects being watched carefully. The warm bath should be used daily for twenty minutes with massage while in the water. Alma-Bromo water has been most effective in my hands for the past two years. Turkish, hot air, vapor, and Russian baths with manipulation aid greatly in elimination. Galvanism and Faradism in the hands of those who understand their use relieve pain and help prevent muscular weakness, atrophy, and deformity.

Without discussing the chemical reaction and the therapeutic rationale of modern remedies used, we desire to note the clinical results, so near as ascertainable, of a few of the more valuable drugs used in the treatment of this disease.

Antipyrin, according to See, Guttman, and Stezeninski, in doses of from four to six grams per day, and continued for a week or ten days, produces beneficial and satisfactory results. This I would not dare use where there is heart weakness, or valvular lesion. They hold that it is found efficacious where antifebrine and the compounds of salicylic acid have apparently failed. Its use, they say, reduces temperature, alleviates pain, and prevents implication of the cardiac membranes, without producing any of the unpleasant effects caused by salicylates. The beneficial results obtained by the drugs in these cases are said to be 41.8 per cent. Fowler's solution in

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five-drop doses, gradually increased according to tolerance, and then reduced to one-half of the last dose given, and continued for several weeks or months, as in chorea, seems to have produced excellent results in mild, non-febrile cases. Cascara sagrada has been extolled by Dr. Goodwin and others, given in fifteen to twenty minin doses every four hours. No attempt has been successful in explaining its action, but the results are probably due to the laxative effect helping the elimination of salicin, and the salicylate compounds being among the most powerful antiseptics known, I believe, on this account, to be the sovereign remedies in the treatment of rheumatism. These should be used along with laxatives, alteratives, eliminants, stomachics, tonics, and proper attention to the general rational indications. To Maclagan Stricker, and Riess we owe the credit of bringing this remedy to the notice of the profession. Salicin produces many similar effects to those of quinia.

In an acute case the treatment with salicylic acid should be commenced by giving twenty grains of the drug in elixir or lemonade every two hours for the first twelve hours, or until tinnitus aurium is produced. The same dose is to be continued every three hours for the next twelve hours, and thereafter for four or five days the same amount is to be given every four hours. The regulation of the amount given is to be determined by the physiological effect and abatement of the symptoms, i. e., the reduction of the temperature, the relief of pain, and the depression of the heart's action. The most frequent cause of the failure in the use of this remedy is in not giving a sufficient quantity at each dose, or not repeating the amount frequently enough. Whenever the symptoms begin to subside, the amount or the frequency or both should be diminished to the point of saturation, but the remedy should be administered for at least six weeks in every case, aided by constant elimination and repair. I have found good results within the first forty-eight hours, and the more acute the case, the more effective the results of the

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remedy. In treating over two hundred cases I have not found any who have not obtained benefit, and sixty per cent. of the primary acute cases have been entirely relieved. The more chronic the case, the longer the treatment should continue.

I believe the heart and brain complications sustain the same relation to schizomycete, or the blood changes produced by its presence, along with a local inflammation, as does the joint affection. I have not often noted heart or brain mischief where the salicylic treatment has been used from the beginning, and there was no previous heart lesion; usually later on in cases where the salicin has not been used until inflammation has already occurred in the cardiac membranes upon which the salicin proportion have no direct effect.

To cure the rheumatism is not to cure the heart lesion, for the effect may remain after the cause is removed. The appropriate treatment of the rheumatism at its inception ought to prevent the heart from becoming affected. After it is once affected, however,, relief is only obtained in the same way as if the inflammation had arisen from other causes. The same is true of inflammation of the dura mater. I speak of these because I believe the only immediate or remote danger to life in cases of rhematism to be in the implication of these organs.

After the more acute symptoms have subsided, quinia, cod-liver oil, iron, Fowler's solution, and the iodides in small doses should be administered for weeks and even months, as the inflamed textures do not recover their tonicity so soon as the inflammation ceases. The administration of the salicylic compounds arrests the course of this disease chiefly by their antiseptic and antimicrobic action, destroying or rendering inert the schizomycete concerned in its production. They also have a diuretic effect. They reduce the temperature by removing the cause of the inflammation by which the temperature is produced, and thus relieve tension and pain simultaneously. They thus arrest and shorten the course of the disease by removing its cause.

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By the elimination of the materies morbi through the emunctories of the body, accomplished by the use of hydrotherapeutics and our ordinary remedies, we have the system again restored to its normal state, save the effect of the attack upon it of the specific schizomycete which has produced the malady, and the possible retention of some of the microbes for future ravages whenever the condition of the system becomes favorable for their multiplication and renewed activity.

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ON THE NERVOUS AFFECTIONS CAUSED BY THE POISON OF GOUT.

DAVID INGLIS, M. D.
Detroit.

We have long recognized the poisonous effects of drugs. We are familiar with the fact that the ingestion of exceedingly minute quantities is capable of producing the most profound alteration in the functional activity of the nervous system, or the circulatory apparatus.

That a susceptible individual shall be profoundly affected by the hundredth part of a grain of atropia excites no surprise. We are prepared to explain a vivid scarlet rash, or a threatening vaso-motor paralysis, as a result to be expected from a single dose.

It is only of late years that we begin clearly to recognize the importance of the poisons generated in the body.

It is becoming more and more clear that toxic alkaloids can be self-generated which equal in virulence the known medicinal alkaloids.

Furthermore, these self-generated poisons are so numerous and so commonly present that we cannot fail to agree with Mr. Darwin, who, on having his attention called to the constant risk of poisoning by the products of our own digestion, said, "It is a wonder that we are alive."

The poison which has been longest recognized by the profession as thus self-generated is uric acid.

The relationship of uric acid in the causation of gout has long been known, and can be looked upon as fully established;

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nevertheless, it may still be profitable to review our knowledge of this drug and its source of origin.

For a long time it was believed that uric acid was a direct product of the metabolism of muscular substance; that its formation in the body was proportional to the activity of muscular use; that great muscular activity meant a great increase of uric acid formation and excretion.

When the pedestrian Weston started out to walk a thousand miles in a thousand hours, it was naturally expected that such enormous muscular activity, and so regularly carried out, would cause a corresponding increase of uric acid formation, but the results of constant uranalyses were disconcerting. First of all, the net increase of uric acid formation and excretion was not proportional to the amount of exercise; and second, the excretion was subject to marked variations, while the muscular activity never varied from hour to hour.

In searching then for a cause of this variation Flint found that the amount of uric acid excreted varied according to the amount of nitrogenous food ingested. After a meal of vegetables or farinaceous foods the quantity of uric acid was low, after a good beefsteak it was abundant.

The experiment demonstrated that the free use of meat, game, or highly nitrogenized food caused a rapid increase in the amount of uric acid excreted. Haig, in his recent work on uric acid, has given the most beautiful elucidation of the formation and excretion of uric acid, and most clearly points out one other and a most important factor in this study of uric acid. It is this: The amount of uric acid to be found in the urine at any time does still not vary in exact correspondence with the amount of nitrogenous food ingested, but it varies accurately with the acidity of the urine; hence the analysis of the urine, while it does give account of the quantity of uric acid *excreted*, does not reveal the amount of uric acid which is retained in the system. It is of course evident that the poisonous effect of the uric acid depends upon the retained, not upon the excreted salt. I cannot but enlist your

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interest in Haig's work, which, while it fully corroborates the work of Garrod and others who have preceded him, has the great merit of carrying us much further in the physiology of uric acid formation than has hitherto been done. We may summarize the matter thus: The metabolism of our own muscles steadily forms uric acid, but this formation is but slightly modified even by considerable exercise. Were there no other source of uric acid, the kidneys could easily excrete it all, and accumulation would be practically impossible.

By far the greater quantity of uric acid in the system comes from the nitrogenous food taken in, and every effort seems to be made to rapidly excrete the salt thus thrown into the blood.

Uric acid is easily soluble in alkaline blood—almost insoluble in acids—hence in proportion as the blood is alkaline it dissolves the uric acid, carries it to the kidneys, and so favors its excretion. Any physiological change in the body, or any drug which tends to increase the acidity of the blood, lessens the excretion and favors the precipitation of uric acid in the tissues. The precipitation tends to occur in tissues in which the circulation is least active.

When such accumulation has gone on till a certain saturation of the tissues with insoluble uric acid is reached, we begin to find the toxic effects of the drug. Uric acid is a poison which is cumulative in its effect. It is for this reason that the earlier symptoms of uric acid poisoning are so commonly overlooked. Nevertheless, such gouty affections are extremely common, and many a neurotic patient is neither more nor less than the victim of intemperance in the use of meats.

Here I must stop to enter a protest against an idea which seems to prevail, uniformly in the lay mind, and largely in the professional, that a good, nourishing diet is equivalent to a meat diet; nothing could be further from the truth. In a growing child the amount of proteid substance required for the rapidly increasing tissues is, of course, considerable, and a meat diet undoubtedly furnishes this in a form readily accessible; but in an adult, in whom the body weight has

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reached a standstill, such need of albuminoid food does not exist. Now the fact is that even in a child the amount of albuminoids needed for growth can very readily be obtained from vegetable foods. A child that gains twelve pounds in weight during a year is growing very rapidly. It is entirely unnecessary to give to a child, growing even as rapidly as that, from one to two hundred pounds of meat during the same period. Indeed, if you will call to your recollection the children who are voracious meat eaters, you will usually find that they are neither robust nor rapidly growing, but usually of the slender and nervous type.

If, then, children who are adding to their albuminoid tissues rapidly do not need much meat, how much more so is it with adults, who have ceased growing?

Probably the simplest demonstration of the fact that the daily supply of albuminoids to the adult can easily be furnished by a vegetable diet is presented by the building of the Union Pacific railway. The building of a railway over the Rocky Mountains probably involved as great and exhausting muscular activity as any labor could do; yet this was accomplished by Chinese coolies who lived on a purely vegetable diet, unless we except the luxury of a little rat's flesh on high holidays.

I feel the necessity for this digression for the reason that my greatest difficulty in persuading my patients to cut down their use of meat is the fallacy that only meat is truly strengthening. On the contrary, the use of meat as it is carried out in our country, is both unnecessary and injurious. Unnecessary, because the finest physical vigor can be kept up on a very small allowance of meat, and injurious, because the only effect of putting an excess of meat into the system is to add to the amount of labor to be done by the liver and kidneys. The man who sits down to a fine dinner is simply taking in enormous quantities of uric acid, and his liver and kidneys have a busy time in promptly getting it out again.

One of the lasting absurdities of medical practice is the ad-

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ministration of beef tea. Beef tea is practically an infusion of uric acid. Concentrated beef extract consists of uric acid to the extent of eighty-eight per cent. of its bulk. Our grandmothers' domestic use of fresh urine was no more absurd than our use of meat extracts—simply a little less palatable.

Instead then of thinking of a diet rich in meat as peculiarly nourishing, it is nearer to the truth to think of it as a stimulating diet and to regard the person who takes it as eating a considerable quantity of uric acid which he must sooner or later get rid of. If he fails to do so completely he accumulates in his tissues a poison from which he will hear later on.

The reason that this relation of ingestion of uric acid to disease is not commonly recognized is that the effect is not immediate. The excess of uric acid is taken care of in two ways. As soon as it is ingested the liver and kidneys and skin set to work to excrete it, and in healthy and vigorous persons they practically do succeed in excreting it all.

"The amount of urea cast out daily is calculated to be 512 grains, of which about 100 is eliminated by the skin."

This explains why men who work hard and perspire freely can eat meat foods ad libitum without bringing on gouty symptoms. They take the uric acid in and immediately pass it out. The red flannel shirt contains a good deal of yesterday's beefsteak.

But let such a man break a leg, or be suddenly obliged to cease his usual activity while still continuing to take in uric acid, and the excretion be lessened, he has turned toward gout. The workman promoted to be foreman is in double danger. His increased wages tempt him to a richer diet, i. e. more meats, and his decreased activity slows down his excretion. He does not at once become gouty, for the second way in which excess of uric acid is taken care of is going on; namely, the uric acid is stored up in the tissues. Not until the accumulation has reached a certain point of saturation does the protest of nature become loud enough to be heard.

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All the time that the accumulation has been going on nature has been trying to adjust herself to it. The uric acid in the blood has kept the arterioles more or less constantly in a state of contraction. The high arterial tension has slowly resulted in a hypertrophy of the arterial walls, and a corresponding hypertrophy of the heart; the actual blood supply to the different organs and tissues has been growing less, although the full, hard pulse and florid face seem to indicate the contrary. The kidneys secrete less actively, and the accumulation of uric acid increases more and more rapidly on that account. The acid is deposited in the tissues in which the circulation is least active, and when the point of saturation is fully reached the patient has an attack of gout—"old fashioned gout."

In this country a case of old-fashioned gout is a rarity. I have no doubt that many of my hearers have never seen a typical, inflamed, gouty toe. Nevertheless, gout is probably quite as common a cause of disease in the United States as in England, although our national habit of life is too restless to allow our rich men to sit still and develop old-fashioned gout.

The object of this paper is to call attention to the poisonous effects of gout upon the nervous system, the more particularly because a recognition of gout as the cause will often permit of a speedy cure of serious and threatening nervous affections. It would really lead to the writing of a paper far beyond the limits granted to enumerate all of the nervous affections which are caused or kept up by the gouty poison. Their variety is great, because the gouty poison, circulating with the blood, affects all parts of the nervous system, the point of diseased action varying in different individuals. I will confine myself to certain distinct and frequent manifestations of gout.

A prominent lawyer introduced himself to me after this fashion: "I have been sent to you on account of this heart of mine; but I wish to tell you beforehand that I do not wish you to give me any more digitalis. I have been taking digi-

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talis for five months, and my heart has hammered and run just as hard as ever in spite of it."

The valves of his heart were found to be in excellent shape; the area somewhat increased; the impulse very strong, and the rate 96 beats per minute; and this rapid pounding had been going on steadily for several months. It turned out that my patient considered himself to be a man of unusually careful habits of life; neither tobacco nor alcohol could be blamed for his runaway heart. He carried the nervous strain of an extensive and responsible practice, but was a man of domestic tastes. His table was abundantly spread, and the best that the market afforded always awaited him.

Meat three times a day was his steady diet.

To my new patient's surprise, I promptly promised him relief, and said, "I will not only give you no digitalis, but shall give you for the present no medicine whatever. Go home, eat absolutely no meat or eggs, and drink five glasses of water a day."

In a week he returned with a heart's action as quiet and easy as could be desired.

When I told him his trouble was simply gout his face lit up, and he exclaimed, "Why, I did not tell you, but I have twice been laid up with gout in my foot."

Since that time he has been able to bring on or remain free from his palpitation just as he chooses. What he is pleased to call "a good, nourishing diet," meaning meat, will in a few days set his heart off on its old career. Note that in this case the palpitation was incessant. It was not a case of a weak heart palpitating on exertion, but a strong heart hammering away steadily trying to get the blood through his arterioles, which were steadily contracted under the influence of the uric acid which he ate three times a day, and ate abundantly.

In this connection I wish to take issue with Haig in his statement of the relation of arterial tension to the pulse rate.

Those of my hearers who have read Haig will recall that he uniformly associates high arterial tension with a slow pulse,

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his only exception being, "if the heart fails before the high tension we shall get palpitation, or a quick, irregular pulse instead of a slow one." In this Haig is in error. It is not only entirely possible, but it is of frequent occurrence, that high arterial tension with a strong heart are associated with palpitation. The palpitation of a weak heart is uniformly aggravated by exertion. The palpitation of gout occurs with a strong heart, and occurs independently of exertion, at times being continuous, as in the case just related, at times coming on suddenly while the patient is sound asleep or quietly reading, i. e., with no exertion st all.

On the other hand, there seems to be no doubt that the high arterial tension caused by the gouty poison is a common cause of bradycardia, and in these cases the physiological explanation is just as Haig states.

Another form of nervous affection which is frequently caused by the gouty poison is angina pectoris.

The modus operandi of the uric acid is similar to that which causes the palpitation, or the bradycardia, a contraction of the arterioles resulting in high arterial tension. In my own experience I have come to look upon high arterial tension as the prime cause of the greater percentage of cases of angina pectoris.

Even in cases in which auscultation shows the presence of a valvular murmur this is often the case. It is a matter of occasional occurrence to find patients in whom a cardiac murmur is sometimes clearly audible; at other times not. I have found that a murmur due to increased arterial tension may thus appear and disappear, and if the increased arterial tension be due to uric acid, a rigid attention to diet may cause its entire disappearance, and with it the disappearance of the angina.

Closely connected with the action of uric acid on the circulation is its relation to headaches and migraine. In the causation of migraine, I regard eye strain as by far the most common starting point, but of the cases of migraine not

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clearly caused and kept up by eye strain, it is a very common thing to find clear evidences of uric acid accumulation. Indeed, I believe that in many cases uric acid and eye strain are joint factors. This explains the fact that correction of ocular defects not infrequently brings partial but not entire relief of the migraine.

Probably no better picture of the relation of uric acid to migraine could be selected than Haig's account of his own case.

"Having been all my life a sufferer from migraine, it was in the autumn of 1882 that, in despair of obtaining any complete relief from drugs, and not without some fear that I was really suffering from organic disease, I gave up all butcher meat and replaced it by milk and fish.

"I had previously tried a great variety of alterations in diet, including an increased allowance of meat and various alterations in quantity and quality of less important constituents, such as sugar, tea, coffee, and tobacco, without any noticeable result. But on the non-meat diet a change was at once apparent; my headaches diminished both in frequency and severity; and from an average of one in a week they fell steadily, as the diet was persevered in, down to one in a month, one in three, six, eight, or twelve months; and eventually eighteen months elapsed without an attack of notable severity.

"Since that I have never gone back to butcher meat, and I never intend to, because by avoiding it I obtain what is practically immunity from a disorder which, at one time, bid fair to cripple me, and prevent completely all mental and sedentary work; not that the headache was confined to periods of sedentary work, for I have often had to give up portions of a day's shooting because my head was too bad to stand the noise and concussion of firing; and yet this was in the open air in the country, and when a book had probably not been opened for weeks, and under conditions which were infinitely

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more favorable to health than those in which I now exist and have immunity.

"But if I at any time forget my lesson of the past, and presume on my apparent security from attack, if I dine with two or three friends in the same week, and especially if I take both meat and wine, of the action of which I shall speak presently, I am practically certain to have a more or less severe headache in two or three days' time; though, as will appear further on, I can generally prevent the intense pain from which I used to suffer in former days.

"Having arrived, then, at the conclusion that leaving off butcher meat had practically relieved me of headache, I began to ask why this was so, and at first (*Practitioner*, 1884) I was inclined to attribute it to the formation of some poison, possibly of the nature of a ptomaine, in the intestines during the digestion of the butcher meat.

"But a further study of the clinical history of migraine brought out such a strong relationship to gout, that (*Practitioner*, 1886) I began to suspect that uric acid might be the poison of which I was in search, and I therefore proceeded to estimate the excretion of uric acid and urea."

In migraine and uric acid headache we are dealing still with the effects of the poison upon the circulation. The cause seems to be clearly a contraction of the arterioles—heightened blood pressure and a lessened blood flow through the capillaries with the necessary result of an impaired nutrition of the area supplied. In spite of the blood pressure there is an essential anæmia behind the arterioles.

Closely connected with the nervous affections just noted is the mental change of hypochondriasis or of melancholia.

In both of these conditions the relation of the mental state to the liver has been known from antiquity—indeed the names denote the relationship. At the present time we might dispute whether the liver, the stomach or the kidneys are the offending organs, but, inasmuch as all three of these organs are intimately associated in the taking up, the formation and

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the passing out of urid acid, it is probable that we can cut the knot by simply saying that the failure of one or all of these organs which leads to the presence of an excess of uric acid in the blood, may, and frequently does, cause extreme mental depression.

I hardly need to give a typical case—almost every practitioner before me could furnish an account of a case of hypochondriasis or melancholia which went through varying phases of deepest gloom and comparative well being.

The administration of some calomel or some mineral acid brings the patient out into the sunlight only to relapse into despair when the uric acid, which the calomel or the acid drove out of his blood back into his tissues, begins to be dissolved again by the alkaline blood.

The doctor and patient finally lose heart and lose confidence in calomel, and justly so, for the calomel or the acid does not remove the uric acid from the body, but simply keeps it in the tissues for the time being. As long as the blood is not full of soluble uric acid the patient is happy.

When the patient is removed to an asylum he begins to get better, and I suspect that his improvement is due to systematic exercise and a diet in which, for economic reasons, nitrogenous food does not preponderate. He no longer loads up with so much uric acid, and by increasing bodily activity he gets rid of part of his accumulated uric acid.

There are all grades of mental depression which can be traced to this cause, and the pessimism of great capitalists, lawyers and doctors, is probably quite as much due to the good meat which they eat as the optimism and lightness of heart of the Irish peasants are due to the meat which they don't eat.

Among other nervous diseases in which uric acid plays an important part is to be mentioned epilepsy. Just as in migraine eyestrain and lithæmia sometimes act conjointly as causes, and the patient will not get better until both causes have been removed, so in epilepsy I believe that uric acid acts

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very commonly in conjunction with some other (often reflex) cause. There are cases in which it seems pretty clear that the uric acid alone is capable of setting up epilepsy. Whenever I come on a case of epilepsy which has suddenly developed after the age of thirty in a well-fed, well-to-do professional or business man, I strongly suspect gout, but the more common history is this: the patient has a fit at long intervals, keeps at his work, but a fit occurring in some public place he inspires a feeling of dread in his associates, he loses his position, ceases to work, but continues to have an excellent appetite, as epileptics are apt to do. Now, whereas before he had fits at long intervals, he soon has them at shorter and shorter intervals. Whatever may have been the prime cause of the convulsions, I believe that the rapid increase in frequency, which so often comes on when the patient ceases active work, is due to the gout. The proof lies in the remarkable results which can be won by changing the diet so as to stop putting in uric acid, and adopting such means as will help to dissolve and excrete the uric acid which has accumulated. Bromide of potash is not the only drug to be used in epilepsy. A vigorous course of salicylic acid sometimes has a marvellous effect.

I presume the disease of the nervous system which is more commonly due to gout than any other is hemiplegia, but the mode of action is indirect. The uric acid has caused high arterial tension, a hardening of the arteries, and a hypertrophied heart. Finally a cerebral artery degenerates, a clot forms and occludes it, or the artery ruptures. This is truly a gouty affection, but my paper is intended to call attention to the nervous affections more directly caused by uric acid.

There is a form of transient cerebral paralysis which is not uncommon. An elderly person feels a numbness in one arm and leg; it passes off quickly, leaving no vestiges; from time to time it recurs, always on the same side. There may be with it a similar trausient motor paralysis. Such a condition is not infrequent, and seems to be due to a spasm of an artery, prob-

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ably already narrowed. The well-known action of uric acid in contracting the arteries furnishes an explanation of such cases.

It is well to remember that old people can be gouty even when they eat very sparingly of meat. The excretory functions in the old go on badly, and gout is not due to the uric acid taken in, or the uric acid sent out, but to the balance which has accumulated.

There occur from time to time cases of apoplexy or hemiplegia in which the post-mortem examination shows no visible lesion whatever. While I have no means of demonstrating the truth of the theory, I cannot but adopt as the most reasonable theory this one, viz.: The patient has been accumulating uric acid in the tissues; is saturated; the blood, becoming thoroughly alkane, dissolves a large quantity of uric acid, and blood so surcharged overwhelms the cerebral cells with the poison. It is a case of acute auto-intoxication occurring in a person already saturated with uric acid.

One more form of nervous affection due to gout deserves mention as being of very frequent occurrence. I refer to peripheral neuritis. The following case, although a very mild one, will illustrate it. The poison causes neuritis of all grades up to those of the severest forms, such as sciatica, and forms accompanied by muscular atrophy.

An English lady in comfortable circumstances, who inherited from her father a love for out-of-door life, and who would at once attract notice for her evident fine physique and physical vigor, consulted me on account of her fear of paralysis. She was strong enough as yet, but the numbness and prickling in her legs seemed to her a serious menace. At night this became an intolerable itching, which prevented sleep. All sorts of external applications had proved futile.

She was given some salicylate of soda, and cut off from the use of meat and eggs, which was a hard sorrow to her, for she said that there was really nothing left to eat. When told that she need have no fear of paralysis, but that she had

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the gout, she recalled the fact her father, whom she strongly resembled in habits and tastes, had suffered severely from it. After trial of her new diet, so firmly was she convinced that she could suffer or be free from her itching and numbness at her own will that when I saw her a few months later, I learned that for a period of four months she had tasted no meat or eggs.

For the benefit of those, and they are many, who always think of meat foods when they think of "a good, nutritious diet," I may say that my patient, when I saw her last, remained the same fine, strong, well-looking woman as she appeared at first. But she had learned the great lesson that:

"Gout is the disease of those who will have it."

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PERSONAL EXPERIENCES REGARDING ALTITUDE IN ORGANIC CARDIAC DISEASE.

HUGH McCOLL, M. D.
Lapeer.

It is a commonly accepted idea, and one that is generally taught by clinicians in medicine, as well as by the mature thought of our text books on medicine, that it is not safe for anyone having organic disease of the heart, with symptoms, to go to a high altitude, or to suddenly leave the level of the sea for a place say 2,000 to 4,000 feet above sea level. Such teaching has deterred physicians from sending patients with organic heart disease to higher altitudes, even when other conditions seemed to demand the change. This idea prevails among the laity also, and it would take considerable argument to get the consent of a patient, who is aware that he has chronic, organic, cardiac disease of any kind, to go to a mountain region. There are lesions of the heart in which this change would be injurious; but in the most frequent heart lesion, mitral insufficiency, when accompanied by a fair amount of compensatory hypertrophy, there is not only no danger, but a decided relief and benefit from the altitude. It is reasonable that with the dry, rarified atmosphere at an elevation of 4,000 to 6,000 feet, the capillary pressure of the surface as well as in the lungs being lessened, the work of the heart is diminished, and the jaded, tired heartache disappears as if by magic. Where, however, the tendency to dilatation has advanced to the degree of interfering with the tricuspids, there might be danger, as well as with other difficulties of degeneration of the heart walls.

My own personal experience set me thinking on this sub-

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ject; and as I have repeated it to men eminent as teachers in medicine, and found a look of astonishment on their countenances till they began to weigh the question scientifically, I thought well to bring it before this society in order to make it a matter of record.

I have been a sufferer from attacks of acute rheumatism for twenty-five years, having had nine attacks during that time, with four attacks of endocarditis, leaving me with much crippled mitral valves, with a large hypertrophy, which partially compensates the insufficiency. Twice I have had symptoms of failing compensation, following attacks of la grippe. Three years ago I had constant fatigue pain of the heart, as I was doing hard professional work, with a sense at night of emptiness in the top of my head, with a great deal of difficulty in recalling words. In the fall of that year I went to Mexico, and when I had attained an elevation of 5,000 feet at Las Vegas my cardiac fatigue pain had gone. I could walk with a great deal more ease and comfort than I could here; and, while others suffered from head symptoms (fullness), all my head emptiness had disappeared, and a natural buoyancy took its place. For four weeks of the time I was away I was at an elevation of from 3,000 to 10,500 feet, and always with comfort. At Mexico City, 7,350 feet above the sea, I was able to walk freely without shortness of breath or fatigue such as I experience here.

Again last year I had a severe attack of la grippe, which seriously crippled my heart; and finding that I was very slow in regaining my usual condition, I went to California to the meeting of the American Medical Association. We were detained at Colorado Springs nearly three days on account of washouts, elevation about 5,000 feet, and the magical effect of the diminution of pressure was at once apparent. I have also sent to the same elevation two others suffering like myself, with marked benefit. They returned home after a couple of months in very good condition. The improvement in their cases was very rapid, as well as in my own.

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DISCUSSION OF THE PRECEDING PAPERS.

DR. SHURLY, Detroit. I have a few remarks to make on the papers of Dr. McColl and Dr. Inglis. I am very glad that Dr. McColl has taken up this subject, for I feel that we, as a profession, do not thoroughly understand the relation between the organic diseases of the heart and altitude, and perhaps one reason why we do not is because we have not enough recorded experience regarding climate, in its relation to the several heart lesions, to guide us. Now in a case such as Dr. McColl describes, his own case of simple hypertrophy, there can be no doubt, as he says, but that going to certain altitudes rather quickly produces a beneficial rather than an injurious effect. But, on the other hand, whether such an effect would be experienced by a patient with fatty degeneration, or with some pulmonary complication through which the blood might back up in the pulmonary vessels, is somewhat of an important question. In the latter class of cases I should think it would be absolutely necessary for a high altitude to be approached gradually by the patient. I believe such has been the conclusion of a number of writers on cardiac disease. However, I am glad the doctor has brought up the subject for discussion, for I think we do not send patients with cardiac disease to the proper altitude often enough.

With regard to Dr. Inglis' paper, the most of what he said, I think, will be endorsed with but little objection. Perhaps I did not understand him rightly; but if I did, I should think he was too dogmatic and too sweeping in some of his statements. As I understand it, we do not yet know just what the diathesis or process of uric acid production is, nor of the development of many other of the metabolic poisons. We do not know how many of these chemical poisons arise

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from within the body exclusively, nor do we know always just what condition is most favorable for the generation of such poisons in many cases. In other words we do not always know the individual relation clinically to the phenomena observed, because of the complexity of the phenomena observed. I do not think, therefore, as a general rule, that we can pronounce unmistakably upon a meat or nitrogenous diet as being unfit generally for omnivorous man. If we consider aboriginal man, we find that he eats a meat diet almost exclusively. Vegetable food amounts to little or nothing in the dietary of the American Indian, for instance; and yet rheumatism and gout, and all of the diseases supposed to depend upon a "gouty diathesis" are unknown to the *uncivilized* Indian. It is only as he becomes civilized, and lives like a white man, that he comes to have such diseases. I believe that the principal etiological factor in many of these cases is to be found in the individual constitution and habits, the person and his surroundings. I also believe that one individual may be able to live a sedentary life, and eat a great deal of meat or animal food, and yet have no rheumatic or gouty affections whatever; while another, under similar environment and regimen, may be subjected to pain, neuralgia, rheumatism, or other disturbances. I therefore feel that the doctor's statement that uric acid alone is the cause of a large majority of these affections, and that redundancy of uric acid is always caused exclusively by a meat diet in all individuals, is rather too sweeping to be supported by facts.

Dr. H. M. King, Grand Rapids. I will just say a word with regard to the very able paper read by Dr. Pettyjohn. If I understand him correctly, he favors the theory, not altogether new, of the specific nature of rheumatism; that it is due to a specific micro-organism. We have seen this theory advanced from time to time of late, and I am inclined myself to consider it favorably, but as yet am not convinced that it is sound, and do not feel that confidence in it which he seems to express. The fact that rheumatism is recurrent argues against

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its being a specific, contagious disease, as such diseases, after they have run their course, generally give a certain amount of immunity from future recurrences, that is, the acute infectious and contagious diseases. What, probably, Dr. Pettyjohn intended to imply was that rheumatism was a miasmatic, infectious disease, due to the presense of a vegetable miasm, which possibly may sometimes be found in the blood, but which, as I understand, has not yet been differentiated. In regard to the specific nature of its infection, if it is infectious, I am inclined to think it a mismatic, rather than a specific contagion of germ origin, which his illustrations would seem to have made it.

Dr. W. C. Stevens, Detroit. I was very much interested in Dr. Inglis' paper, and I regret that I did not know that he intended to write it, so that I might have made some special preparation for discussing it. I am quite familiar with the ideas which he has enunciated here today, from frequent consultations with him in the sick room in these anomalous cases of pain; and while I am not prepared, and would not attempt it if I were, because I would simply get into hot water, to attempt to decide the question between Dr. Shurley and Dr Inglis, as to whether or not it is uric acid which caused these symptoms, I would simply say that I believe, whatever the cause of these pains, they are due to a meat diet. I believe this is as near true as anything we can prove in medicine, until we have isolated the poison, and have it laying before us on our table. I have in mind a number of cases where a meat dinner will produce the symptoms which he has told us about today. A case which came under my observation, and which Dr. Inglis saw a number of times with me in consultation, is a gentleman of robust frame, and engaged in an ordinary occupation. He had a severe headache once or twice a week, and noticed as he was driving about the city that he would lose consciousness, and lose all idea of where he was. He would be going, we will say, directly north, and would pass a certain street, which we will call Ninth Street, and from there

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to Twelfth Street he would not know where he was, or what had happened; his trusty horse would go right along, and when he had reached Twelfth Street he would suddenly regain consciousness and find that he had passed three blocks. The pain would be so intense that he would be obliged to go to bed. The pain was accompanied by spasm of the arterioles. The pulse, wherever it could be felt, would be found fine and thready, and there was the same marked palpitation of the heart which Dr. Inglis mentioned. One peculiarity which I have noticed, but which I do not remember to have noticed in the writings of others, the urine was not diminished in quantity, but was very low in specific gravity, and very pale. Now this sort of thing went on until he was disqualified from attending to his business. Dr. Inglis in consultation advised just what he has advised here today, that a meat diet should be discontinued; and yet, with the discontinuance of this meat diet, the headache did not entirely disappear. The late Dr. Henderson, of Detroit, meeting this gentleman in a friendly way said he would never fully recover unless he gave up milk. If you take meat, eggs, and milk away from your patients, I assure you they will dislike it very much; yet, with the discontinuation of the meat and milk, this patient of mine regained his health, and returned to his work. I would like to mention one thing; a good, nourishing diet is not necessarily a meat diet; a good, nourishing diet may be something else. I would simply say this man has touched no meat, eggs, or milk for ten or twelve years, and is in better condition than he has been in the last twenty years, and is doing ordinary work; and after watching his case all these years, I have come to the conclusion that men in ordinary, sedentary occupations can find a good, nutritious diet and live fairly well without indulging in meat.

DR. SHURLY. I would like to ask the doctor if he has noticed any accumulation of adipose tissue on this restricted diet?

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DR. STEVENS. Yes, sir; it is one of the most difficult things to reduce the fat.

DR. GEORG, Ann Arbor. I want to make one remark, and it is upon the paper read by yourself, Mr. Chairman. In the first few years after the introduction of salicylic acid, it was found that the early, persistent use of the drug in acute pleurisy prevented effusion, and I have used it my practice probably twelve or fourteen years, as long as salicylic acid has been in use, and I cannot remember of a single case of pleurisy that terminated in effusion where the medicine was persistently used. We all remember it early recommended as the best remedy we had for rheumatism of the acute articular form, and I think it is so held until the present day. I know you can keep patients under the influence of salicylic acid for weeks in large doses, which cannot be done with antipyrine without producing the deleterious results of all coal tar products, namely, a changed condition of the red blood corpuscles. I would make a further suggestion, and it is this; that the acid of the wintergreen oil be used instead of the acid from coal tar products.

DR. PETTYJOHN. Just a word in regard to the statement of Dr. King, as to whether the origin of rheumatism is due to micro-organisms, and as to whether the origin of the micro-organism of rheumatism is miasmatic or not. The former I believe verily; of the latter we are all uncertain. It seems to me the clinical study of this disease shows that recurrent attacks are due more to the fact that the condition of the patient is such as to allow a multiplication of these micro-organisms in the system. I believe that where the micro-organism is thoroughly destroyed, and its products thoroughly eliminated, there will not be any recurrence of rheumatism. If it be miasmatic, and the patient subjects himself to miasma the second time, he may have another attack on that account. But I believe the recurrent attacks to be similar in expression to the specific infection of syphilis. Where it exists in the system many years, secondary symptoms may express them-

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selves later, because the system has not become rid of the original poison on account of the short time of the treatment. I think the general practitioner, and all others who have these diseases to treat, are agreed that we do not treat the patient long enough. We treat him until the symptoms that express themselves disappear; he becomes comfortable and is satisfied, and will not submit to further treatment. The doctor who must assume the responsibility should direct the duration of the treatment. I would say that clinical study and observation of a large number of cases during the past thirteen years has borne me out in the belief that, where treatment is continued long enough, the recurrence of the disease has not happened to the patient, even where the father and mother had been subject to the same disease, and it was called hereditary.

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MICHIGAN STATE MEDICAL SOCIETY.

SECRETARY'S MINUTES

OF THE

THIRTIETH ANNUAL MEETING, HELD AT BAY CITY, JUNE 6TH AND 7TH, 1895.

FIRST DAY—GENERAL SESSION.

THURSDAY, JUNE 6TH.

The Society convened in the Methodist Church, corner of Ninth Street and Madison Avenue, and was called to order by the President, Dr. H. O. Walker, of Detroit, at 9 A. M.

Prayer was offered by the Rev. M. C. Hawkes, after which President Walker introduced the Hon. T. A. E. Weadock, of Bay City, who delivered an appropriate address of welcome.

President Walker then introduced Dr. A. F. Hagadorn, of West Bay City, who delivered an address of welcome on behalf of the local profession.

The President called for the report of the Executive Committee, and Dr. C. T. Newkirk, acting as chairman, made the following verbal report.

Mr. President and Members of the Michigan State Medical Society:

Your committee appointed by the State Medical Society have been assisted materially in their work by the Bay County Medical Society. The President, Dr. Randall, appointed a committee which aided us very much in our preparations to receive you here. We thought of engaging the opera house in which to hold the sessions, but finally decided that this magnificent church (the use of which was tendered to us by

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its trustees) would be better, as all of the sections could meet in this building at the same time.

The Section on Medicine will meet in this room; the Section on Surgery in the next room; and the Section on Midwifery and Gynecology in the side room.

We have invitations from the Bay City Club and the Masonic Club; also an invitation to visit the great steel plant we have here, which is one of the largest in the West.

This evening, immediately at the close of the session, we are invited to a reception at the residence of the Hon. S. O. Fisher. Mr. Fisher will be happy to meet every physician who is attending this meeting.

We had intended to arrange for a boat ride on Saginaw Bay, but at the present time we have no regular boat here that we could get conveniently for you to go without interfering with the meeting; and our Secretary wrote to me suggesting that we give as little time as possible to entertainments; that the object of our meeting was for scientific work.

Your Executive Committee have made an arrangement by which you can take a ride around the city in carriages, starting from the Frazer House and other hotels. The gentlemen of the city have kindly offered their carriages for that purpose.

The President said the next thing in order was the annual report of the Secretary.

Secretary Hitchcock submitted the following report.

Mr. President and Members of the Michigan State Medical Society:

The events of the year have not been of unusual importance. I had hoped that with the Legislature just adjourned the first step had been accomplished toward some more efficient legislation for the protection of the public and the benefit of the profession by needed regulation of the practice of medicine in Michigan.

Of the benefits of systematic professional organization through the state none of us can have any doubt. A plan

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was presented in the President's address of last year. The American Medical Association has been urging upon State Societies, too, the benefits of the adoption of some uniform plan, which shall embrace the organization of a Society among the regular profession in each county, whose members shall sustain stated relations to the state and national bodies.

Such a plan is commendable in many ways; but to your Secretary it has not seemed possible of adoption in this state from the fact that many of our counties are so thinly settled, and often times the profession of a district (embracing two or more counties) is so scattered, as to almost preclude efficient *active* organization. Even in some of our thickly settled counties there is no *county* organization, and when District Societies exist the district from which the membership is drawn is irregular and illy defined—nothing systematic about it. In other counties, though thickly settled, the railroad connections are such as to practically divide the profession of the county, that of one side of the county being only with difficulty accessible to that of the other side.

Where our state borders on other states, Societies exist which draw their membership from two or three states. What possible relation can the members of such Societies sustain to this Society? So it seems that there are many obstacles at present in the way of more systematic professional organization, such as is desirable and possible in more thickly settled states. It hardly seems that we can now make our State Medical Society more efficient as representative of the whole state than by active effort on the part of our members to enlist the aid and sympathy of active men in the regular profession throughout the state, until ALL the good men in the regular profession are members of this Society. Here is good missionary work for all members.

Your present Secretary has served you for five years, and has endeavored to be faithful and diligent in the Society's work and interests. The duties of the office are many and taxing. He asks your patience and leniency for any of his

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short-comings, and desires to especially thank those members whose appreciation of his work has not infrequently found expression in such kindly commendation as is the best possible stimulus to new and better work for the Society. The especial effort and pride of your Secretary has been in an endeavor to improve the Transactions so as to make them the equal, in appearance and value for permanent preservation, of those of any other society.

As the Transactions of any society are an indication of the efficiency and real value of its work, so, I am sure, any effort looking to their improvement is effort well spent; and the majority of our membership have been liberal in their expressions of appreciation and praise for what has been accomplished.

For my successor I bespeak your kindly indulgence, and I wish to assure you that your words of commendation will do much to hold up his hands and urge him on to still better work.

The work of the Society has been conducted with careful regard to economy. The only successful policy for the Society must be one of sound business, on the principle that no debt must be contracted which the Society does not see its way clear to pay; and members must appreciate that they have no right to the Society's publications for which they do not promptly pay.

There is no ground in right or equity for the assumption that the Society should print and pay for transactions for *all* members, and store them indefinitely until it is the pleasure of such members to pay their dues.

Prompt payment of dues is essential to our prosperity.

In accordance with Article IV, Section 3, of our by-laws, I am compelled to report the following members as *three years in arrears for dues*. These members have been politely and repeatedly notified of their delinquency, and in accordance with the above by-law will now lose their membership:

Bailey, E. H., Corunna.
Balfrey, O. M., Saginaw.
Belknap, S., Niles.
Bell, Samuel, Detroit.
Dean, O. A., South Haven.
Duncan, T., Saginaw.

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Edelman, F. W., Saginaw.
Freeman, J. W., Saginaw.
Hare, W. J., Detroit.
Jones, W. S., Corunna.
Ketcham, W. J., Dowagiac.
Lambert, W. C., Wyandotte.
Langlois, T. J., Wyandotte.
Laraway. G. L., Emery.
Leach, H. M., Saginaw.
McDannell, O. E., Lowell.
McEntee, James, Mt. Pleasant.
Moon, O. N., Howell.
Morse, C. W., Dowagiac.
North, J. D., Jackson.
Northrup, M., Port Huron.
O'Reilly, W. J., Saginaw.
Pierce, L. D. H., Centerville.
Pendell, E. J., Newaygo.
Riker, A. W., Fenton.
Seeley, O. F., Climax.
Smith, W. B., Ann Arbor.
Spencer, C. E., Fort Gratiot.
Thomas, H. F., Allegan.
Towsley, M. L., Kalamazoo.
Upjohn, W. E., Kalamazoo.
Upjohn, J. T., Kalamazoo.
Van Liew, V. C., Lemon.
Wever, George, Marlette.
Wilson, John, Detroit.

I have also to report, as *two years in arrears*, the following:

Arnold, A. L., Owosso.
Avery, E. J., Coldwater.
Bates, Noah, Flint.
Bennett, J. C., Plymouth.
Bryan, Alonzo, Detroit.
Campbell, O. B., Ovid.
Campbell, W. A., Ann Arbor.
Clancy, C. C., Port Huron.
Clark, W. E., St. Ignace.
Cogshall, Bela, Flint.
Crotser, L. S., Edmore.
D'Arcy, Benjamin, Mayville.
Devendorf, C. A., Detroit.
Eaton, O. P., Detroit.
Edwards, W. F. H., Detroit.
Eldred, J. N., Chesaning.
Eves, William, Waterford.
Failing, J. F., Grand Rapids.
Flagler, W., Imlay City.
Freeman, F. W., Saginaw.
Gordon, G. G., Flushing.
Greene, George W., Battle Creek.
Handy, J. W., Flint.
Hagler, E. E., Ann Arbor.
Heath, G. F., Monroe.
Hoyt, E. A., Bay City.
Lee, John, Detroit.
McMeekin, J. W., Saginaw.
McPherson, J. A., Grand Rapids.
Mabbs, J. A., Holland.
Main, F. W., Jackson.
Marshall, Jos., Gaines.
Matthews, J, D., Gaines.
Merritt, S. W., Ft. Gratiot.
Mills, H. R., Port Huron.
Morris, R., Vassar.
Massbaccher, C. T., Saginaw.
Nichols, A. W., Greenville.
Palmer, H., St. Johns.
Phillips, H. H., Vandalia.
Pollard, J. W., St. Johns.
Richmond, P. E., Mt. Pleasant.
Riker, J. D., Pontiac.
Rose, G. L., Decatur.
Stevens, R. H., Grand Rapids.
Stewart, Alex., Highland Park.
Taylor, H E., Mt. Clemens.
Todd, George H., Jeddo.
Ward, W. E., Fenton.
Weaver, L. F , Nashville.
White, William H., Grand Rapids.
Wiggins, O. B., Lawrence.
Williams, J. R., White Pigeon.
Wooster, S. R., Grand Rapids.

Very respectfully yours,

CHARLES W. HITCHCOCK.

Secretary.

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THE PRESIDENT. What will you do with the report?

DR. CONNOR. I move that it be accepted.

Carried.

DR. CONNOR. In view of the long list of names of gentlemen who have apparently failed to be interested in the work of the Society, and in view of the small membership that we already possess, it would seem that it is worth while to make a systematic study of the reason for this, and if possible to inaugurate measures that will obviate it; and I therefore move that a committee be appointed by the chair (five in number), of which the Secretary shall be the chairman, to take that matter under consideration, and to carry into execution such measures as they may find neeeful to promote the membership of this Society, and to make a report next year.

Carried.

The President later appointed the following "Committee on Ways and Means to Increase the Membership of This Society."

C. H. JOHNSTON, Grand Rapids.
L. CONNOR, Detroit.
E. BOISE, Grand Rapids.
P. D. PATTERSON, Charlotte.
C. T. NEWKIRK, Bay City.

The next thing in order was the annual report of the Treasurer, Dr. W. G. Henry, which was read by the Secretary, in the absence of Dr. Henry, as follows.

Mr. President and Members of the Michigan State Medical Society:

In pursuance with the recently adopted financial policy of this Society, the good results obtained last year and this fully bear out its wisdom and expediency. It is very much to be regretted that members do not attend to the matter of their dues much more promptly. Polite reminders of their delinquencies are sent to them immediately after each meeting, and two or three times thereafter before the next meeting. All of these reminders place the Society at no inconsiderable expense. Furthermore, as a copy of the Transactions is

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printed for every member, and as the number of delinquent members is very large, and many allow their names to be dropped from the roll, you will thus observe a large and unnecessary loss to the Society is entailed. Having each member present his receipt for dues paid in full before he can vote at the election of officers has exercised a most beneficial effect, and should by all means be continued, at least until some plan as good but less crude has been found.

The membership dues now in arrears are divided as follows: For one year, 52; for two years, 58; for three years, 40.

RECEIPTS.

Balance in treasury, 1894	$ 333 55
Membership fees	1,495 00
	$1,828 55

DISBURSEMENTS.

Printing	$ 848 39
Secretary's expenses	11 01
Dues remitted, Dr. Ranney	9 00
Reporting	201 00
Distributing transactions	80 55
Treasurer's postage, duns, etc	20 30
R. R. Association of Michigan	5 00
Dr. R. Peterson, secretary's expenses	8 50
Honorarium to secretary	200 00
Honorarium to treasurer	100 00
	$1,482 75

ASSETS.

Membership dues in arrears	$ 852 00
Balance in treasury	344 80
	$1,196 80

LIABILITIES—None.

All of which is respectfully submitted,

WILLIAM G. HENRY,
Treasurer.

DR. CARSTENS. I move that the report be accepted and referred to the Committee on Finance.

Dr. MACLEAN. I second the motion, and inasmuch as Dr. Henry's services have been so efficient, and he has been confined to a bed of sickness for some time, I move that the

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Secretary be authorized to send Dr. Henry a telegram thanking him for his report, expressing our regret at his absence, and our hopes for his immediate recovery.

DR. CARSTENS. I accept the amendment.

The motion as amended was carried.

THE PRESIDENT. We will now listen to the report of the Committee on Publication.

The Secretary submitted the following report.

Mr. President and Members of the Michigan State Medical Society:

Your Publication Committee begs leave to report that a better state of the Society's exchequer permitted the publication of a full edition, 650 copies, of the Transactions for 1894. These copies have been distributed to Public Libraries, other State Medical, and various other Societies who exchange with us, and the Secretary's office is still made a storage room for a large number of copies which members ought to claim by the prompt payment of dues. Of several bids secured for the work, that of John Bornman & Son, of Detroit, all things considered, seemed the most advantageous, and they were awarded the contract. I think that you will agree with me that the work was well done.

The cost of the Transactions was as follows:

Total cost of printing, binding, etc., 650 copies	$ 735 07
Distributing to those entitled to receive them, for postage, expressage, etc	69 55
Wrapping, etc	11 00
Net cost	$ 815 62
Cost per copy	1 25

Respectfully submitted,

CHAS. W. HITCHCOCK,
Chairman and Editor.
ELIZABETH L. DEUEL,
REUBEN PETERSON,
GEORGE DOCK,
AUGUS McLEAN.
Committee on Publication.

Detroit, June 5th, 1895.

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THE PRESIDENT. You have heard the report of the Committee on Publication. What action will you take on it?

DR. SHURLY. I move that it be adopted.

Carried.

THE PRESIDENT. We will now hear the report of the Committee on Admissions.

The chairman of this committee, Dr. H. D. Thomason, of Albion, read the report as follows.

Mr. President and Members of the Michigan State Medical Society:

At the meeting of the Society held in Lansing, May 3 and 4, 1894, objections were urged against the applications of Dr. J. R. Dodge, of Hudson, and Dr. Mary A. W. Williams, of Eaton Rapids. The Society passed a resolution to the effect that both these applications be referred back to the Committee on Admissions, with instructions to make a careful investigation, and make a written report to the Society at the meeting to be held in Bay City, June, 1895.

In accordance with these instructions your committee would beg leave to make the following report.

First.—Upon the application of Dr. J. R. Dodge, of Hudson; After careful investigation made through personal correspondence from various sources, both lay and professional, the submission of numerous affidavits, and personal investigations of the committee in special session, we find that Dr. Dodge's standing, both social and professional, is such that we see no reason why he should be denied admission to the Society. Moreover, the charges have been withdrawn. On account of the above reasons, we would recommend him to the favorable consideration of the society.

Second.—Upon the application of Dr. Mary A. W. Williams, of Eaton Rapids: Your committee would beg leave to report that the same methods of investigation were followed in this case, and in addition a personal visit was made to the city of Eaton Rapids by one member of your com-

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mittee. Your committee were unable to find any direct positive evidence of unprofessional conduct on the part of Dr. Williams, and would therefore respectively recommend her application to favorable consideration.

All of which is respectfully submitted.

H. D. THOMASON,
R. LEBARON,
WM. M. EDWARDS,
Committee on Admissions.

THE PRESIDENT. What will you do with this report?

DR. CARSTENS. I move that it be adopted.

Carried.

DR. NEWKIRK. One of the oldest members in the profession in Michigan is with us this morning—Dr. Noyes. He has retired from practice, and is living in another state. He has always paid his dues up to the present time, and I therefore move that we relieve him of that by electing him to honorary membership.

Carried.

The President then invited Dr. Noyes to take a seat on the platform, which he did.

The Committee on Admissions, through its chairman, made a further report, as follows.

To the Michigan State Medical Society:

Your Committee on Admissions would respectfully recommend that Dr. J. F. Noyes, of Detroit, be made an honorary member of this Society.

H. D. THOMASON,
R. LEBARON,
WILLIAM M. EDWARDS.
Committee on Admissions.

THE PRESIDENT. You have heard the further report of this committee. What action will you take on it?

On motion of the Secretary, this report of the Committee on Admissions was accepted and adopted.

THE PRESIDENT. The next report is that of the Committee

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on Necrology, Dr. D. Milton Greene, of Grand Rapids, chairman.

Dr. Greene submitted the following report which, on motion, was adopted.

Mr. President and Gentlemen of the Society:

Your Committee on Necrology beg leave to report that in the past year, and since our meeting in Lansing in 1894, twelve of our brother physicians and co-workers in this Society have gone over to the majority. This is an unusually large number of deaths to occur in our Society in one year, in fact, the greatest number I have known to occur. It is a notable fact, also, that of those who have been taken from us there are several who were eminent in the profession. The chairman would be glad to recite their many virtues, and give at length their biographies, but the time of this Society is so taken up with other business, I will refrain from so doing. I will furnish the Secretary, however, a more complete account, which may appear in the Transactions of this Society.

Dr. D. W. Berdan, of Cheboygan, who died July 8, 1894, was born at Macon, Lenawee County, Michigan, November 17, 1853; was graduated from the Saline Union School in 1874; entered the Medical Department of the University of Michigan the same year, where he took one course of lectures, after which he entered the Bennett Medical College, of Chicago, graduating in 1877; practiced in Maybury, Monroe County, and in Detroit until 1883; spent the following winter in Bellevue Hospital Medical College, graduating in 1884, and that spring opened a hospital in Cheboygan for the treatment of lumbermen, and continued the hospital for four years. In 1888 he quit the hospital, and resumed general practice, which he continued until his death. Dr. Berdan married Laura Gillitt in September, 1882, who, together with a son eight years of age, are left to mourn his early and untimely taking off. One of the most notable traits in Dr. Berdan's character was his charity for the poor, who, together with a

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large circle of warm friends, will miss his kindly words and ministrations.

DR. E. B. DUNNING, who passed peacefully away in the village of Paw Paw August 3, 1894, was born in Webster, Monroe county, New York, in 1830. In 1854 he graduated from the medical department of the University of New York, and immediately entered upon the practice of his profession. The same spring he was married to the faithful wife who is now his sorrowing widow. His professional work was continued in the east until 1876, except during three years of army life, when he was in an honorable and responsible position, in charge of the general hospital at Alexandria, Virginia. In 1876 he came to Michigan, settling at Mattawan. He removed to Paw Paw in 1874, and since that time he has enjoyed the confidence and respect of all the community, being one of its brightest physicians and a good citizen. His last work was done nine months before his death. The cause of his death was said to be Bright's disease.

DR. A. H. KIMBALL, of Battle Creek, Michigan, was born October 23, 1850, at Corinth, Vermont; graduated from Barry Academy in 1869; entered Dartmouth College, and took therefrom the degree of A. B. in 1873. In 1875 he graduated in medicine from the medical department of the same college, and the following winter took a post graduate course in Bellevue Hospital. He located in Cummington, Massachusetts, early in 1876, and married Mrs. Marion C. Baker in September of the same year. He spent the winter of 1882-83 at the New York Post Graduate School. In April, 1883, he moved to Battle Creek, Michigan, where he died of consumption August 6, 1894. He leaves a wife and two sons. Dr. Kimball was well known by many doctors in this state, and esteemed as a man of scholarly attainments, and honorable in his profession.

DR. J. R. MCGURK, who died at his home in Capac, Michigan, August 6, 1894, was born at Belfast, Ireland, March

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16, 1843; came to Hamilton, Ontario, in 1849. After teaching school a few years he studied medicine at Moontown, Ontario, with Dr. Gamble; attended one course of lectures at Ann Arbor, and graduated from the Detroit Medical College in 1870, and located at Capac, where he enjoyed a large practice. In 1878 he was elected Representatlve to the State Legislature, and was elected to the Senate in 1881. He leaves a widow, three brothers, and three sisters. Dr. McGurk was a member of the pension examining board, under appointment by President Harrison. He was attacked with quinsy, which resulted in suppuration of the left tonsil. The pus was evacuated, and all symptoms improved until August 1, when phlegmonous erysipelas supervened, extending to the nares and face, finally resulting in septicæmia and death after two weeks illness.

Dr. George Culver Palmer, of Flint, well known to most of you, late Medical Director of Oak Grove, was born December 27, 1839, in Stonington, Connecticut; received his preliminary education at Suffield, Connecticut; entered the literary department of the University of Michigan, where he spent three years, He graduated in medicine from the medical department of the university in 1864, receiving immediately thereafter an appointment in the Michigan Asylum for the Insane at Kalamazoo, where he served upon the staff as Assistant Physician and Assistant Medical Superintendent until July, 1878, when he became Medical Superintendent. In 1891 he resigned the latter position, and was elected Medical Director of Oak Grove. Dr. Palmer originated the colony system of management of the insane, and to his writings and his personal work the successful establishment of state care in Michigan is in a great measure attributable. He was self-sacrificing and philanthropic, beloved by all who knew him well, and his life work was well done. He passed away August 17, 1894, aged fifty-four years.

Dr. Henry F. Lyster, of Detroit, whose death came with a shock to almost every physician in the state, "one of God's

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noble men," was so well known to the profession, but for record it would be needless for me to make any comment. For five years before his death the doctor suffered from anæmia. He was on his way to Sante Fe, New Mexico, seeking benefit by change of climate, accompanied by his wife, his son (Dr. Wm. J. L. Lyster), and Dr. C. B. Jennings. As the train neared Niles, Michigan, the doctor fainted. All efforts to revive him failed, and he died without regaining consciousness, October 4, 1894. He was a man of commanding figure, kindly presence, of high literary and medical attainments, and considered one of the leading physicians of Detroit. His counsels were sought by many physicians in Detroit and throughout the state. Dr. Lyster has filled many positions of honor. He was, at one time, a member of the State Board of Health; was Editor of the Peninsular Journal of Medicine; was President of the Michigan College of Medicine; has always been a member of the faculty of the Detroit College of Medicine, and was always its Treasurer, and was at one time Lecturer on the Practice of Medicine in the University of Michigan, and was Professor of Surgery in 1868-69. He belonged to the Michigan State Medical Society, the Wayne County Medical Society, the Detroit Medical and Library Association, and the American Medical Association. Dr. Lyster was a great writer upon the subjects of his profession. By his death the medical profession has sustained a great loss, as well as has the medical world. The resolutions of respect presented by the Detroit College of Medicine will appear in the proceedings of this Society.

A most accomplished physician and surgeon, Dr. John B. White, of Saginaw, Michigan, died of erysipelas at his home on....., 1894. He was attending a patient suffering from erysipelas, and in reaching for an instrument from his case, he struck his head against the globe of an incandescent lamp. The sharp point pricked the scalp slightly. He put his hand to his head, and thereby inoculated himself, and within forty-eight hours was beyond the reach of medical

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skill. Dr. White was a well-known physician, as he had practiced in Saginaw for over forty years. He was born January 13, 1826; was a farmer boy until eighteen; was educated at a common school; studied medicine with Dr. H. B. Moore, of Manlius, New York; in 1844 attended one course of lectures at Geneva; graduated from a Philadelphia college; practiced in Manlius; was offered the appointment of Demonstrator of Anatomy in the College of Dental Surgery, of New York, in 1854, but did not accept, as he had determined to move to Saginaw, where he has been in practice ever since. Twenty-five years of the time he spent in general practice, since which time he had devoted himself mostly to gynecology. Dr. White was studious, proud of his profession, and upheld its dignity. He helped to organize the State Medical Society; was a member of the American Medical Association. On June 1, 1853, he married Harriet E. Mitchell, of Manlius, New York. She died December 24, 1893. He leaves two sisters and two brothers. He had been a faithful servant to the sick for many years. The world is better because he has lived. Both the profession and the people have lost a faithful friend.

In relating the death of Dr. James Marcus Cook, of Muskegon, I feel a deep sympathy and sense of responsibility. He was my dear friend, and were I to say in his favor all I feel like doing, it would take more time and space than I have at my disposal. I knew him as a boy, as a teacher in the public schools, as a brave soldier in the late rebellion; I have known him as a physician, and I have never known him but with the greatest admiration. He was well posted in his profession, though unassuming, honorable in his professional work, and above all, a true friend. He was taken sick with pleuro-pneumonia, and sank rapidly from the first. On Thursday he passed into a state of coma, and died on Friday morning, December 21, 1894, aged fifty-five years. He was born in Saratoga, New York, March 21, 1839. After a course in the Oxford, Oakland County, Academy, he taught

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three years, when he commenced the study of medicine; was three years in the late war, and then returned to his medical studies in the University of Michigan, where he took one term of lectures; graduated from Rush Medical College in 1868, and located in Muskegon in the same year. Dr. Cook became known throughout western Michigan as a physician and surgeon. He has twice been Vice President of the State Medical Society; was President of the Muskegon County Medical Society; President of the Muskegon Microscopic Society; and was a member of the Central Drug Company of that city. He was a man of the people, and foremost among the citizens of Muskegon in any charitable enterprise. Dr. Cook had taken two post graduate courses of study in the schools of New York, and for the past few years had done a great deal of work in the eye and ear specialty. He was a devoted member of our Society, and a member of the American Medical Association. "While yet in love with life, and raptured with the world, he passed to silence and relentless dust."

Dr. William Wood was born on a farm near St. Thomas, Elgin County, Ontario, August 17, 1838; attended the grammer school at St. Thomas, and taught school in his native county. In 1860 he entered the medical and pharmacutical departments of the University of Michigan, graduating in medicine in the spring of 1862, and from the department of chemistry in June of the same year. His first practice was in the village of Sparta, in his native county, where he remained until 1864, when he removed to Grand Rapids, where he has been actively engaged in the practice of his profession until a few days before his death. He was President of the Grand Rapids Medical and Surgical Society in 1875, and was a charter member of the State Society in 1866. He died from paralysis, due to chronic meningitis with effusion, on January 13, 1895. His body was laid to rest beside his mother in Oak Hill cemetery. He leaves a widow, two daughters, and one son.

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DR. GEORGE W. TOPPING died at his home in DeWitt, Clinton County, January 14, 1895, at the age of sixty-seven years. He had been sick for several weeks, but it was thought he was getting better. The doctor died while sitting in his chair reading his mail matter. He rallied from his former illness, which began last fall, and had so far recovered as to be able to go to Lansing. He was born at Mentz, Cayuga County, New York, December 11, 1828. He spent his boyhood days on a farm, and attended the district school; then went to Groton Academy, and later studied in the Normal School, of Albany, where he was given a free scholarship. He taught school for some time, and then entered the office of Dr. J. V. Griggs, of Montezuma, and commenced the study of medicine. Later he studied with his brother-in-law, Dr. W. S. Alaben, and then took one term of lectures in the Wooster University, of Cleveland, Ohio. He then went to California, where he spent three years in mining, and then returned to Lockport, New York, and took up the study of Latin and German. In 1853 he entered the medical department of the University of Michigan, and in the spring of 1854 received his diploma, and at once settled in DeWitt, where he pursued the practice of his profession until his death. Dr. Topping was president of the State Medical Society in 1882, and was a Mason, and a man highly esteemed by his profession as well as the laity. He married Lusiana Hurd, who accidently burned to death in 1864. In 1865 the doctor marriedSindenia A. Ballard. He leaves a family consisting of a wife, two daughters, and one son.

DR. GEO. C. PEASE died at his home in Fulton, Kalamazoo County, Jannary 25, 1895, at the age of 49 years. The cause of his death was said to be heart disease. He enjoyed a good reputation as a physician and was much respected in the community in which he lived. "He had not reached on life's highway the stone that marks its highest point, but being weary for a moment and using his burden for a pillow he laid

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down by the wayside and fell into that dreamless sleep, that kisses down his eye-lids still."

With your permission I will report the death of Dr. Eli Woodman, of Farmington, Mich., which occurred November 20, 1892, but for some reason or other failed to get into the records of this Society. Dr. Woodman was born at Walton, Vt., August 28, 1826. In 1833 he came with his family to Novi, Oakland County, this state; was educated in the common schools in which he afterward taught during the winter, working during the summer on a farm; commenced the study of medicine in 1850 with Dr. Hayes of Farmington, and in 1853 commenced practice at Grand Ledge, and moved from their to Berlin, Ottawa County, the next year. In 1859 he returned to Farmington. He entered the University of Michigan, from which he graduated in 1868. In 1856 he married Mary A. Brinkerhof of Kayuga, N. Y. He was a member of the State Medical Society, and of the Wayne, Oakland, and Washtenaw Medical Societies. He was postmaster, appointed by the last democratic president before the war, and by the first democratic president after the war. He leaves a wife and many friends who cherish his memory.

Dr. Augustas Kaiser died at his home 365 St. Aubin avenue, Detroit, on the morning of October 27, 1894. The doctor had been taken ill two weeks before with a chill which developed into a fever, and he was ill some days before it was known that he had appendicitis. He positively refused to allow an operation to be performed for his relief, holding that it was almost necessarily fatal. Three days before his death he became very low, and the last sacraments were administered. Dr. Augustus Kaiser was born at St. Agatha, Ontario, August 24, 1843. He went through the public schools in this town with high honors. Attended college in Montreal; graduated from St. Mary's when 23 years of age; studied chemistry for two years, and became a Professor in St. Jeromes College in Berlin, Ont. He matriculated at Victoris College, and completed his course and graduated at Ann Arbor

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in 1871. He married Miss Mary Lange of Berlin, Ont.; moved to Detroit in 1871. He was appointed city physician and member of the board of health. Dr. Kaiser was physician to the Detroit House of Correction. He was a member of the common council and president of that body for one term. He held various positions of trust and honor in the city of Detroit and was in very great favor with his countrymen, the Germans. He was quite a profuse writer, and successful as a physician.

D. MILTON GREENE,
Chairman.

THE PRESIDENT. Under the head of "Reports of Special Committees," the first committee to report is the one on special legislation concerning embalming practices, Dr. V. C. Vaughan, of Ann Arbor, chairman.

DR. VAUGHAN. I really did not know that the committee was continued. I failed to find in the program any mention of it. The committee was appointed some years ago, and we went to two legislatures, asking them to pass some law regulating the embalming of bodies. The bill never got out of the committee's hands. There seems to be no interest in this matter in the minds of our legislators, and we cannot even report progress. They paid absolutely no attention to it, notwithstanding the fact that in nearly every important murder trial that occurs in Michigan this question of the use of arsenic comes up. There is such a case in Muskegon now, and the neglect to pass such a law will cost several hundreds or thousands of dollars in that case alone, and may be the means of a miscarriage of justice. I would ask that this committee be discharged—at least, I do not care to serve on it any longer. I do not see the advantage of it to the medical profession especially, and we have asked the legislature twice for action, and they have not done anything. I move that the committee be discharged.

Carried.

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DR. CARSTENS. It seems to me that the undertakers should not use arsenic, and the right way for the profession is to devise some other way of serving the people, getting some kind of fluid which is equal to the arsenic solution, if not superior to it, and I see no reason why we cannot do that. I would therefore suggest that a committee be appointed (three) to investigate this question, and see if some other fluid or solution cannot be used which contains no arsenic or other poisons which might cause a miscarriage of justice, and have the committee report at the next meeting. If we can assure the undertakers that we can get up a preparation just as good, or better, I have no doubt that they will use it instead of the arsenic. I make that as a motion.

THE PRESIDENT. Your motion will come up under the head of "Miscellaneous Business."

The next committee to report is the one appointed to memorialize the legislature in reference to a bill for the prevention of blindness; Dr. Flemming Carrow, of Ann Arbor, chairman.

The Secretary read the report, as follows.

To the President and Members of the Michigan State Medical Society:

GENTLEMEN—The committee appointed to secure legislation in regard to preventable blindness begs leave to report that the following bill has become a law.

A Bill to provide for the prevention of blindness in the newly born by compelling midwives and nurses to report in writing to the local health officer any redness or inflammation occurring in the eyes of infants under two weeks of age, and to provide a penalty for the neglect of the same.

SECTION 1.—The People of the State of Michigan enact: That should one or both eyes of an infant become inflamed, or swollen, or reddened, or should any pus or secretion form in the eyes, or upon the edges of the lids, at any time within two weeks after its birth, it shall be the duty of the midwife, or nurse, or other person having charge of such infant, to report in writing within six hours after discovery of such inflammation, redness, or formation of pus or secretion, to the local health officer, or some legally qualified practitioner of medicine of the city, town, or district in which such case shall occur, the fact that such inflammation or swelling, or redness or inflammation of the eyes exists.

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SEC. 2.—Any failure to comply with the provisions of this act shall be punished by a fine not to exceed one hundred dollars ($100.00) or imprisonment not to exceed six (6) months, or both.

Very respectfully,
FLEMMING CARROW,
Chairman.

On motion, the report was adopted, the committee discharged, and thanked for its efficient work.

THE PRESIDENT. The next committee to report is one to take action with reference to establishing a Bureau of Public Health, Dr. C. Henri Leonard, of Detroit, Chairman.

Dr. Leonard submitted the following report.

REPORT OF THE COMMITTEE UPON THE ESTABLISHMENT OF A NATIONAL BUREAU OF HEALTH.

Members of the Michigan State Medical Society:

The committee to whom was referred the matter upon the establishment of a National Bureau of Public Health, begs leave to report progress, as follows. Since our last meeting the question has become a national one in that the President of the United States, in his message to Congress last December, strongly recommended the passage of an act enabling the establishment of such a national board. The text of this portion of the message is as follows.

I am entirely convinced that we ought not to be longer without a National Board of Health, or National Health Officer, charged with no other duties than such as pertain to the protection of our country from the invasion of pestilence and disease. This would involve the establishment by such board, or officer, of proper quarantine precautions, or the necessary aid and counsel to local authorities on the subject, prompt advice and assistance to local boards of health, or health officers, in the suppression of contagious disease, and in cases where there are no such local boards, or officers, the immediate direction by the national board, or officer, of measures of suppression; constant and authentic information concerning the health of foreign countries, and all parts of our own country, as related to contagious diseases; and consideration of regulations to be enforced in foreign ports to prevent the introduction of contagion into our

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cities, and the measures which should be adopted to secure their enforcement. There seems to be at this time a decided inclination to discuss measures of protection against contagious diseases in international conference, with a view of adopting means of mutual assistance. The creation of such a national health establishment would greatly aid our standing in such conferences, and improve our opportunities to avail ourselves of their benefits. I earnestly recommend the establishment of a national board of health, or similar national instrumentality, believing the same to be a needed precaution against contagious disease, and in the interest of the safety and health of our people.

Of course, you well know that this recommendation has not become a law; but we need to feel encouraged rather than discouraged at the progress so far made, for it is only a few years ago that the question was first urged at a meeting of the American Medical Association. The original petition from the American Medical Association to Congress was for the purpose of establishing a Department of Public Health, with a secretary thereof who should be a member of the cabinet, and on a parity with the heads of the other departments, and that this secretary should be a physician. This proposition met with the approval of the Pan-American Medical Congress, which met in Washington in September, 1893, and since then has been endorsed by other large medical societies.

There need not seem to be anything presumptuous in this asking of a position in the cabinet for a physician, for if the safety of the nation needs protection by the force of arms, and therefor a representative of the army and navy in the cabinet, so may the safety of the same nation be undermined and jeopardized by the force of contagious diseases, and so need protection from the unseen but equally dangerous foes. This is but one of the advantages to accrue from the establishment of such a board as petitioned for, the national control of quarantine, be it either intra-state or extra-national. It is not necessary for us to enumerate all the advantages to be gained by us as a nation, by the establishment of this national board, for such can be found in the transactions of the American Medical Association, in the transactions of the Pan-American Medical Congress, and especially in an article contributed to the North American Review by Surgeon Gen-

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eral George M. Sternberg, which may be briefly summaried, as follows.

"The principal objects of the Central Health Bureau, should be to extend and disseminate exact knowledge regarding sanitation, to give advice with regard to its application to special cases, to correspond with the central authorities of other countries for the purpose of learning their methods of sanitary administration, and the results of the same, and to collect and publish vital statistics." He lays stress upon the importance of the last mentioned of its functions. "It is only," he says, "with reference to vital statistics, that we can obtain precise information as to the principal areas of prevalence of various preventable diseases, the reason for increased or diminished prevalance in given areas, and the results obtained by sanitary improvements."

The New York College of Medicine recommends, in endorsing the general movement for the establishment of this bureau, that the head of the department, being a cabinet officer, shall act in unison with an "advisory council," this council being made up of a member from each state, who shall be a physician of good repute, and who shall receive his appointment from the government of the state he represents. It is questionable if this be necessary; it has a good many good features and will bear future discussions, though your committee are against the advisability of favoring such a council, fearing lest it would become a mere political machine as an ultimate result; but what we recognize as most important is, that our forces be marshalled for the establishment of this *National* Bureau with the cabinet officer, as proposed, and the discussion of the details be left till Congress has granted our main petition.

To further this, it needs individual action as well as society action. Each member of this society can do much, very much, by writing a personal letter to his representative and his senator, asking the passage of such an act as will create such a bureau as petitioned for. If every physician in the

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United States would send such a letter to his congressman, when the bill was up for discussion, it is more likely that this recommendation of President Cleveland would lead up to a practical conclusion.

For the purpose of keeping the members of this society properly informed when it may be the proper time for them to address such letters to their representatives, your committee would recommend the setting aside of a sum, not to exceed $25.00, that may be used by the committee in properly circularizing the members of the proper time to forward their individual petitions; and also that the committee be granted further time for their final report.

Respectfully submitted,

C. HENRI LEONARD,
E. L. SHURLY.

THE PRESIDENT. What disposition will you make of this report?

DR. HERDMAN. I move that it be accepted and the committee continued.

Seconded.

DR. CARSTENS. I believe the committee have asked for a certain allowance; I move, therefore, that it be granted, so that they can carry on their work properly.

DR. HERDMAN. I accept the amendment.

Carried.

THE PRESIDENT. The Committee on Admissions have a further report to make, and we will now listen to it.

The Chairman, Dr. Thomason, submitted the following.

Mr. Chairman and Members of the Society:

Upon the applications of Dr. Walter H. Sawyer, of Hillsdale, and Dr. E. L. Parmenter, of Albion, the former a graduate of the Homœpathic Department of the University of Michigan, and recommended by Dr. Charles W. Hitchcock, of Detroit, and Dr. Frank M. Gier, of Hillsdale; and the latter a graduate of the Bennett Eclectic College, of Chicago, and recommended by Drs. E. L. Shurly, of Detroit, and

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Eugene Boise, of Grand Rapids, the committee beg leave to make the following statement and report.

Both of these gentlemen have come before the committee and positively renounce their allegiance to any exclusive dogma; claim that they have practiced regular, rational medicine for years past, and have long ago renounced their former exclusive systems. They pledge themselves to observe all the points of ethics required of members of the Society. All of these points these gentlemen agree to make public, if necessary.

From personal knowledge of both these applicants, and careful investigation covering their professional and social careers for a number of years past, your committee in these instances would recommend them to the favorable consideration of the Society.

Recognizing, however, that this may be a dangerous precedent to establish without some special safeguard, we would recommend that a Board of Examiners be appointed to examine into the professional qualifications of all future applicants who do not hold regular diplomas, and that a committe be appointed to so amend the constitution and by-laws of this Society that will provide for this purpose.

H. D. THOMASON,
R. LEBARON,
WILLIAM L. EDWARDS,
Committee on Admissions.

THE PRESIDENT. The report is before you for action.

DR. CARROW. It gives me great pleasure to move that these gentlemen be received as members of the society.

Seconded.

DR. MACLEAN. That motion does not properly dispose of the report, and the proper way would be to move to either accept it or reject it. Personally, I am willing that the report should be accepted and adopted, and that carries with it the recommendation of the committee to take certain precautions for the future, which, I think, are very important indeed. We should have a committee appointed to make such changes

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in the constitution and by-laws as will enable the Association hereafter to act intelligently and safely and liberally in this matter. I think nothing could be more satisfactory to us than to have members of any sect in medicine, who show themselves to be well educated and in other respects socially and professionally suitable and desirable, as members of the Society. I should say it would be proper for the Society to place itself on record in the position which it has always occupied, namely, that so long as the applicant repudiates any unfortunate connection in the past, and declares himself in harmony with the regular profession of medicine, we should receive him with open arms. We should hold out the hand of fellowship to every man who places himself in that position. Therefore, I move, as an amendment, that the report be accepted and adopted.

Seconded.

DR. CONNOR. I heartily concur in the remarks of Dr. Maclean, but this Society is on record last year as refusing to do anything to amend the code of ethics. The code of ethics requires that members of the Society shall be graduates of regular medical colleges. If the committee wish to secure an amendment to the code of ethics, by which a regular medical examination is not required, we will be right; otherwise, as it stands, we will be wrong with ourselves.

DR. CARROW. I am quite willing to withdraw my motion and accept Dr. Maclean's, that the report be adopted.

DR. HERDMAN. We have a by-law to prevent this action. We have adopted the code of ethics of the American Medical Association; but we can suspend this by-law in order to do it regularly.

DR. FROTHINGHAM. I move that the by-law be suspended. I feel that there is nothing in the constitution that will prevent the suspension of this by-law for that purpose.

Seconded.

DR. BOISE. I do not think we ought to suspend these two gentlemen, unless we suspend them with others that come up.

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DR. HERDMAN. I think the recommendation of the committee provided for the future members of the Society, and they are sufficiently satisfied to speak positively in regard to the applications that have been made. The committee are satisfied with the two applications; at the same time, they have acted cautiously in the matter, and they have made a recommendation which is an exceedingly wise one and provides for all.

The motion to suspend the by-law prevailed.

The President then put the motion upon the acceptance and adoption of the report of the committee, which was carried.

The Committee on Admissions made a further report on the names of applicants for membership, recommending their election, and on motion the report was adopted.

President Walker at this juncture stated that he was compelled to leave the hall in a few minutes, and would not be present to deliver his address this evening, and he therefore asked permission to read his address at this time, which he did, First Vice President, V. C. Vaughan, being called to the chair.

On motion of Secretary Hitchcock a vote of thanks was extended to the President for his address and the same referred to the Committee on Publication.

DR. BURR. I would like to know whether a man can be elected a member of this Society who is not actually present at the meeting. I believe that is an important question and I have a resolution which will cover it.

DR. HERDMAN. Is a resolution really necessary for that? If a person is recommended as eligible for membership, I do not think it is necessary that he be present.

THE PRESIDENT. He must sign the constitution and by-laws.

THE SECRETARY. I would like to say that the present custom was in vogue prior to my accession to the secretaryship, five years ago, and I believe there is a resolution on record

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which provides that an applicant, in order to be elected a member, shall be present at the meeting.

DR. CARSTENS. I move that we rescind that resolution.

Carried.

THE PRESIDENT. I sent out a letter to every doctor in regular practice in the State outside of our membership, and I received a large number of letters asking me whether they could become members without being present.

DR. HERDMAN. I think a man can be received by the Committee on Nominations, and recommended by the Secretary at any time. I do not see any objection to that; it will facilitate our work and increase our membership. Here we concentrate our attention for only two days in the year, and this is the time only when such persons can be admitted to membership. We have a Standing Committee on Nominations, and the Secretary is a permanent officer. It is not possible for the Committee to receive members concerning whom there is any doubt.

THE PRESIDENT. That is my recommendation.

DR. HERDMAN. I move that hereafter members be admitted throughout the entire year, instead of confining it to the meeting only.

Carried.*

At this time President Walker left the room, and Vice President Vaughan took the chair.

The next Special Committee to report was the one to petition the legislature with reference to an improved plan for registering births and deaths.

The report was read by Dr. Connor, of Detroit, as follows.

Mr. President and Gentlemen of the Michigan State Medical Society:

At your meeting last year you appointed the undersigned to petition the legislature for an improved plan of registering births and deaths. Your committee secured the co-operation

*Inasmach as members can be *elected* only by a majority vote at some regular meeting (Constitution, Article 2, Section 7), this provides only for the reception of applications, *and not for election to membership.—Secretary.*

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of those most familiar with the deficiencies of the existing law, and the best measures for correcting the same, and formulated a bill, which was introduced into the Senate by Senator James, January 18, 1895, and known as Senate Bill No. 61, File No. 23. Mr. J. T. Campbell introduced the same bill into the house on February 1, 1895, where it was known as House Bill No. 131, File No. 60.

The full text of this bill, with amendments made by the senate committee and senate, is as follows.

A Bill to provide for the immediate registration and prompt return and compilation of births and deaths in Michigan.

(Senate Bill No. 61, File No. 23, introduced by Senator James, January 18, 1895. House Bill No. 131, File No. 60, introduced by Mr. J. T. Campbell, February 1, 1895.)

SECTION 1. The People of the State of Michigan enact: That each city, incorporated village, and township shall constitute a registration district for the registry of births and deaths. The clerk of each city, incorporated village, and township shall be the registrar of births and deaths for his registration district. He shall receive certificates of births from physicians, midwifes, parents, householders, or other persons required by law to make such report, and shall number and record each certificate, in the order in which it was received, in a register of births. He shall also receive applications for burial or removal permits from undertakers or other persons required by law to furnish the same, said applications containing the personal and statistical facts required by law concerning every deceased person, together with the certificate of cause of death, and shall record the same in a register of deaths. He shall transmit the original certificates of births and deaths to the Secretary of State, as provided for by Section 5 of this bill. *Provided*, That the clerk of any city or incorparated village may, upon request of the supervisor of a contiguous township, act as registrar of said township. In such case he shall be known as the registrar of the joint registration district, and shall receive such payment for the record and return of each birth and death received from the township as would otherwise be paid to the township registrar. Separate registers and separate returns shall be made for all cities and villages included with townships in joint registration districts. *Provided further*, That in cities that have an efficient system of immediate registration of births and deaths in operation, at the time of taking effect of this act, conducted by the city board of health, the health officer, secretary, or other officer now conducting such work shall perform the duties of registrar under this act instead of the city clerk, and shall in all respects conform to its provisions.

SEC. 2. Every physician or midwife attending upon the birth of a child shall make a certified return of the facts required relative thereto within three days thereafter to the registrar of births and deaths of the registration district

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in which said birth occurs. Such returns shall contain the following items: Date of birth, stating day, month, and year; name of child; when Christian name has not been given at the time of making the report, it shall be supplied by a supplementary report made when that name is ascertained; sex; number of birth as to mother, as first born, second born, etc.; whether still-born, twin, triplet, etc.; whether legitimate or illegitimate; birthplace, giving ward, street and number, if in a city; full name of each parent; birthplace of each parent; age of each parent; color of each parent; occupation of each parent. If any birth occurs without the attendance of a physician or midwife, then it shall be the duty of the parent or parents of the child or of the householder upon whose premises the birth occurs to report the same to the registrar within three days thereafter.

SEC. 3. The body of no person, whose death occurs in the State shall be interred, deposited in a vault or tomb, or otherwise disposed of, or removed without the State or the registration district in which the death occurred, until a permit for said burial or removal shall have been properly issued by the registrar of births and deaths of the registration district in which the death occurred. A permit for the burial or the removal of the body of any deceased person shall be issued by the registrar only after the filing of a proper application therefore, with a statement of the personal and statistical facts required certified to by a competent person, and with a certificate of the cause of death included therein, and certified to by the physician in attendance during the last illness of the deceased person, by the health officer, or coroner. And such permit for burial or removal shall be granted by the registrar in cases of death from infectious or contagious diseases only in accordance with the regulations of the local board of health, and of the State Board of Health relating thereto.

SEC. 4. The application for a burial or removal permit, with the certificate of death, shall be made upon a blank form furnished by the Secretary of State. It shall contain:

(1.) Application for burial or removal permit; date of death, stating month, day and year, full name, sex; age in years, months and days, if known, or the approximate age if the exact age cannot be ascertained; color; conjugal condition; place of death, giving ward, street and number, if in city; birthplace; occupation; full names of both parents; residence of parents; nativity of parents; proposed place and time of burial; signature and address of persons applying for permit.

(2) Certificate of cause of death; immediate cause of death, together with contributory causes or complications, if any; duration of each cause; date last seen by medical attendant or fact of no medical attendance; in violent deaths, statement whether death resulted from accident, suicide, or homicide; whether a post mortem examination was held and results thereof; signature and address of medical attendant, health officer, or coroner certifying to facts.

The application for a burial or removal permit, together with the statement of facts required therein, shall be signed by a relative, friend, householder, manager of the institution upon whose premises the death occurred, or by any competent person acquainted with the facts. The certificate of death shall be

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signed by the physician last in attendance upon the deceased person (or by the health officer or coroner in case of deaths without medical attendance, or of sudden or violent deaths). It shall be the duty of the undertaker or other person in charge of the burial or removal of the body of any deceased person, whose death occurs in any registration district of the State, to obtain the application for burial or removal permit, with the certificate of death, file the same with the registrar of births and deaths in whose district the death occurred, and obtain the proper burial or removal permit based thereon from the registrar prior to the burial or removal from the registration district of the corpse. And it shall be the expressed duty of the registrar to see that the law governing the issue of burial and removal permits is strictly complied with, that all personal and statistical information required on the blank applications is fully supplied, so far as it is possible to obtain the same with reasonable effort, and that a clear and distinct statement of cause of death, so far as known, is made by the certifying physician. In case of doubt in regard to the return of cause of death, or if a vague, ambiguous, or incorrect statement is made under that head, the registrar shall immediately refer the application to the health officer or coroner, prior to the granting of a permit, who shall investigate and report the facts over his official signature: *Provided*, That in case of investigation of an unsatisfactory return, the registrar may issue, in his discretion, when it shall appear that death resulted from natural causes and not from unlawful means, a temporary permit allowing burial or removal, which temporary permit shall be canceled by a regular permit issued in due form upon the completion of the proper return.

SEC. 5. Books of records shall be furnished to the registrar of each registration district, by the Secretary of State, to be known as the registers of births and the registers of deaths. The register of births shall provide for recording the following facts pertaining to each certificate of birth received: Record number; date of birth, specifying month, day and year; names of parents; given name of child; sex; color; whether stillborn, twin, illegitimate; residence of parents. The register of deaths shall provide for recording the following facts pertaining to each certificate of death received: Record number; date of death, specifying month, day and year; full name; sex; color of each parent; names of parents if a child; cause of death; place of death; place of burial.

The registrar shall number immediately upon their receipt by him each certificate of birth and each certificate of death, using a separate consecutive series of record numbers for each, which shall begin with No. 1 for the first birth and for the first death recorded by him in each year. These record numbers shall constitute a part of the official record of each birth and death in the district registers, and the births and deaths shall be recorded in the order of their record numbers. After the records have been made in the registers, as provided above, the registrar shall promptly transmit, in official envelopes supplied by the State, all the original certificates of births and deaths to the Secretary of State, to be compiled and permanently preserved by him. Such return shall be made by every registrar in the State on the fourth day of each month (on

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the fifth day if the fourth day shall be Sunday or a legal holiday), and shall contain a statement by the registrar that the package contains all certificates of births and deaths filed for the preceding calendar month, that no certificate has been withheld or unlawfully added, and that no alteration, except such as provided for by section four in the case of imperfect returns, has been made therein; and further shall specify any omissions or inaccuracies that may have come to the knowledge of the registrar as affecting the correctness of the returns. Registrars of cities, and registrars of country districts, in case of the prevalence of communicable diseases dangerous to the public health in their districts to an unusual degree, shall make returns to the Secretary of State at more frequent regular intervals than one month, if required by him so to do.

SEC. 6. Still-births shall be recorded and returned both as births and deaths, and a permit for burial or removal shall be required for the body of a still-born child as in the case of a death from any other cause. The application for the burial permit of a still-born child, of a still-born child prematurely born, and of a child of which the cause of death is stated to be premature birth, shall state the month of uterogestation at which the child was born, and the cause which led to its death if known.

SEC. 7. The records of births and deaths shall be preserved by the registrar, and shall be open to inspection by all persons for proper purposes, by all city, village, township, or county officials, by the Secretary of State, and the Secretary of the State Board of Health, or their accredited representatives, provided that such examination shall be made in such a way that the contents of the registers shall not be subjected to risk of damage or alteration or the prompt registry of the births and deaths received by the registrar be interrupted. The registrar shall promptly inquire into the facts when any omissions or discrepancies in the personal or statistical facts accorded are called to his attention by the Secretary of State, shall truly ascertain such missing facts of record, and make a certified statement thereof to the Secretary of State, and enter the correction, in red ink, over his official signature, upon his record. The contents of the register shall be prima facie evidence in all courts and for all purposes of the facts relative to any birth or death therein recorded, and shall be verified, in case of dispute, by a certified copy of the original certificate of birth or death from the Secretary of State.

SEC. 8. Registrars of births and deaths shall receive twenty cents for the proper record and return of each birth and death. The Secretary of State shall certify to each registrar annually, or oftener if it shall be considered expedient by him, the number of properly executed certificates of births and deaths received from him for the year or portion of the year included, which certified statements shall be received by the treasurer of the county in which the registration district is situated, and payment made by him in accordance with the rate fixed by this section. *Provided*, That the Secretary of State shall not include imperfect certificates of births and deaths, nor those not transmitted promptly, as required by Section 5, in the number certified for payment. *Provided further*, That the clerks of cities having a population of ——* inhabi-

* Any limited population may be here inserted that shall be deemed expedient. In the original bill it was five thousand inhabitants. See explanation on page .

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tants or over shall receive no compensation other than their regular salaries for the duties required by this act.

SEC. 9. The Secretary of State shall furnish registers of births and deaths to each registrar, and separate registers to the registrar of each joint registration district for each village, city, or township included. He shall supply registrars with burial permits, with transmit or removal permits, with envelopes for transmission of returns, and with such blanks and stationery as may be necessary for the thorough execution of the law. He shall furnish certificates of births, and certificates of deaths to physicians, midwives, undertakers, or other persons required to make such returns, either directly or through the district registrars, as may be deemed expedient. He shall receive the certificates returned under this act, permanently bind and preserve them, make indexes thereto. and issue certified statements, on application, of the facts relating to any birth or death. For each such certified statement he shall receive a fee of twenty-five cents, together with payment for time of search, if over one-half hour, at the rate of fifty cents per hour, which fee shall be turned over to the treasury of the State. On or before the fifteenth day of each month he shall issue a bulletin of mortality for the State, giving the number of births and deaths registered in each registration district of the State during the preceding calendar month, together with statements of the deaths in each district from dangerous communicable diseases, of children under five years of age, and such other statistical details as may be judged of interest to the public and valuable for the restriction and prevention of disease. He shall also prepare and cause to be published on the first day of March in each year, or as soon thereafter as may be, a report to the Governor of the State on the vital statistics of the preceding calendar year, which shall include such tabular statements, diagrams, maps, comparisons (with the statistics of this State in previous years, and with those of other states, countries, and cities), and deductions therefrom as shall render them of practical utility and serviceable to the public health administration of the State, and promote the scientific study of the vital conditions of the State. In the preparation of this report he shall be aided by such expert assistance as he may deem necessary, and as may be voluntarily rendered by the regularly authorized committees of the University of Michigan, of State medical societies, and of the State Board of Health. The bulletins and report shall be ordered printed and distributed in such manner as the Legislature may from time to time direct.

SEC. 10. Any physician, midwife, parent, or householder who fails to report a birth to the registrar of the district within which it occurred, as provided by Section 2, shall be liable to a fine of not less than five or more than twenty-five dollars, or to imprisonment not to exceed thirty days, or to both fine and imprisonment. Any undertaker, sexton, express agent, railroad official or employe, relative, friend, clergyman, physician, or other person controlling, directing, or in charge of the interment, entombment, removal, or other disposition of the body of a deceased person or of a still-born infant, without a proper burial or removal permit issued by the registrar of the district in which the death occurred, shall be liable to a fine of not less than ten nor more than

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one hundred dollars, or imprisonment not to exceed thirty days, or to both fine and imprisonment. Any physician who shall refuse or fail to make a proper and correct certificate of the cause of death of any person upon whom he or she was the last medieal attendant, to the best of his or her knowledge or belief, shall be liable to a fine of not less than five nor more than twenty-five dollars, or to imprisonment not to exceed thirty days, or to both fine and imprisonment. Any registrar who shall, with justifiable cause, neglect or refuse to perform any of the duties enjoined on him by this act, within the time limited by this act, or who shall communicate to any person not authorized to receive the same any of the personal or statistical facts recorded on his registers, shall be guilty of a misdemeanor, and on conviction thereof shall forfeit a sum not exceeding one hundred dollars. or be imprisoned in the county jail not exceeding thirty days, or suffer both such fine and imprisonment in the discretion of the court; or if he shall willfully and knowingly make or return false certificates or fictitious returns, or cause the same to be done, he shall be deemed guilty of a misdemeanor, and upon conviction thereof shall forfeit a sum not exceeding three hundred dollars, and be imprisoned not more than one year, or shall suffer both fine and imprisonment in the discretion of the court.

SEC. 11. All other acts and parts of acts which are inconsistent with this act are hereby repealed: *Provided*, That the present registration law as contained in act No. 194 of 1867, as amended by act No. 25 of 1869, shall be continued in force until the statistics of births and deaths for the calendar year 1895 shall have been collected, returned, and compiled thereunder.

In brief, this bill provides for the immediate registration of births and deaths; their prompt return to the central registration office; and the early publication of the same for the benefit of the people. In accordance with instructions your Committee presented to the Legislature the following memorial.

To the Honorable, the Legislature of Michigan:

At the twenty-ninth annual meeting of the Michigan State Medical Society, held at Lansing, May 3 and 4, 1894, it was unanimously voted that a committee of five members should be appointed to memorialize the Legislature for the passage of an improved law for the registration of births and deaths in this State. The undersigned were appointed such committee, and accordingly beg to lay before your honorable body certain statements bearing on the necessity for the enactment of such a law, the benefits that it will afford to the people of the State, and certain well-known requisites of modern vital registration to which it should conform.

It should be said at the outset that medical men, as such. have no peculiar personal interests to be subserved by the passage of such a bill, other than those advantages which will accrue to all classes of the community. Indeed, the bill that the committee has examined (Senate Bill No. 61, House Bill No. 131),

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and which it indorses as likely to furnish an accurate and useful system of registration for the State, imposes certain additional burdens upon the medical profession, without recompense therefor. One object proposed to be gained by the bill—prompt and reliable information concerning the sanitary condition of the State—will, in the opinion of this committee, be accepted by enlightened professional opinion as a reward for the labor of supplying accurate statistical details concerning causes of death.

The present registration law of Michigan, which was enacted in 1867, and last amended in 1869, was intended to, but does not, accomplish the results that the proposed bill will obtain. These objects may be summarized briefly as follows:

First.—An accurate record of every birth and of every death for legal purposes.

Second.—Knowledge of the distribution in each part of the State of mortality from all causes, and from diseases of importance, such as consumption, diphtheria, typhoid fever, etc., thus enabling the sanitary conditions of different localities to be accurately compared, as well as that of the State as a whole, with other states and foreign countries.

Third.—Accurate and timely information for the people in regard to changes in the sanitary and social conditions of the State.

The old registration law fails to fulfill these requirements. Its chief defects are the following:

First.—Owing to the fact that births and deaths are not registered as they occur, but are enumerated by the supervisors or assessors in April and May of the year following the registration year, many are entirely omitted, and the facts concerning many of those enumerated are not accurately given, thus invalidating their legal value. It has been ascertained, by inquiry at the office of the Secretary of State, that requests for certified statements of births and deaths that undoubtedly actually occurred in the State, have been frequently received at the State Department, concerning which no information could be furnished on account of the imperfection of the returns. It is estimated by the Secretary of State that only about three births and deaths are correctly returned to his department for every five that actually occur in the State. The injustice that may result from such neglect to children whose certificates of birth are required for the establishment of claims to inheritances, widows obliged to furnish evidence of death for the establishment of pension claims, and the like, is apparent.

Second.—The present returns of deaths do not supply accurate knowledge of the causes of death. The supervisors who make the enumeration have no medical knowledge, nor have the county clerks who receive the original returns and transcribe them for the State Department. As a rule, no information is obtained under the present law from the physicians last in attendance upon deceased persons, from whom alone reliable information can be had. On account of the large number of omissions in the returns, no death rates for the State as a whole, or for any portion of it, can be obtained that are at all reliable for comparison with those of other states or countries having accurate systems

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of registration. Nor for the great variation in accuracy under the present loose system in different counties, and in different years, can the relative degrees of mortality in different parts of the State be correctly estimated.

Third.—Such reports on vital statistics as we have necessarily appear so late under the present law that much of their interest and value is lost. As an example, the births and deaths for the past year, 1894, are not even enumerated at present (February, 1895), and will not be until April and May next. They are not required by law to be returned to the Secretary of State until September 1 next, and their compilation, being received in one mass for the entire year, is then an arduous task. The facts contained in these returns for 1894 will not be available until 1896, or nearly two years, on an average, after their occurrence.

The requisites for an improved registration law are few, and the establishing of such an improved system is no experiment. Such laws have been in operation in the New England States, New York, and New Jersey sufficiently long to show their practical efficiency, and there is no reason whatever why Michigan should not now establish an excellent system which will go immediately into practical operation, and thus give her a position of advantage and priority in the general movement for the establishment of improved public health systems in the Western States. It cannot be too strongly insisted upon that the fundamental basis of public health work and sanitary efficiency is a reliable record of mortality. Facts are better than guesses, and reliable death rates more satisfactory than suppositions as to the relative health of communities.

The principal points to be observed are: (1) That all births and deaths be registered immediately, i. e., as soon after their occurrence as practical, and while all details can be ascertained; (2) that the statement of cause of death in death certificates shall be made by a physician; (3) that all returns shall be promptly made to the central office, and the results of registration be promptly given to the public, in time to be of sanitary value and public interest. All of these essential features are included in the bill "To provide for the immediate registration and prompt return of births and deaths in Michigan," which this committee therefore fully indorses, and prays that it, or some equivalent measure, may receive your sanction.

Respectfully submitted,

LEARTUS CONNOR, Detroit,
WILLIAM J. HERDMAN, Ann Arbor,
EUGENE BOISE, Grand Rapids,
GEORGE E. RANNEY, Lansing,
HENRY B. BAKER, Lansing,
Committee of the Michigan State Medical Society.

Other medical societies and scientific organizations, by memorials of similar tenor, sought to aid the Legislature in its endeavor to serve the best interests of the people. The farther history of these efforts is soon told. The Legislature neglected to extend the courtesy of a hearing to the friends of

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the bill, including the representatives of this Society, the State Board of Health, the State Department, or even its introducer. Hence, your committee were unable to personally urge such considerations as were not embodied in the text. It is feared that the nature of the bill was imperfectly understood, as at one time the chairman of the Committee on Public Health moved that it be referred to the Committee on Liquor Interests.

From the Legislative Journal we gather the following history of the course of the bill. The Senate Committee on Public Health, on January 31, reported to the Senate the bill with certain amendments, and recommended its passage as amended. These amendments were agreed to, and the Committee of the Whole recommended its passage on the same day. On the third reading it was laid upon the table. On February 13, by motion of the chairman of the Committee on Public Health, it was taken from the table and returned to the Committee on Public Health. On March 27 this committee again reported it without recommendation. Being referred to the Committee of the Whole, it was favorably reported upon April 3, but failed to pass on April 10 by a vote of seven to fifteen. Comment upon the course of the Committee on Public Health is superfluous. The House Committee, from deference to the Senate Committee, did not consider the bill.

Because of its far reaching importance to the entire people of Michigan, it is recommended that the committee be continued, or a new one yearly appointed, who shall direct the efforts needful in securing desired legislation concerning the registration of vital statistics.

Signed,

LEARTUS CONNOR,
W. J. HERDMAN,
EUGENE BOISE,
HENRY B. BAKER.

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DR. MACLEAN. I move that the report be accepted and the committee continued.

Carried.

THE PRESIDENT. We will now listen to the report of the Committee on Legislation, Dr. W. J. Herdman, Chairman.

DR. HERDMAN. While I have the honor of being chairman of this committee, I will say that it required so much time and attention that personally I could not properly attend to it. Dr. Voorhees was therefore at the head of the committee, and is responsible for its work, and he will now read the report.

Dr. G. V. Voorhees, of Lansing, then read the report, as follows.

Mr. President and Members of the Michigan State Medical Society:

Your Special Committee on Legislation respectfully report that its members were successful in securing the passage of the following bill by the present Legislature—a bill, the provisions of which commend themselves to the favorable consideration of every citizen of the State who has at heart the interests of the public wellfare; but, in spite of the strenuous efforts that were made on the part of the committee and others to secure the passage of the bill, it has been, on a mere clerical error, vetoed by the Governor within the last twenty-four hours.

G. V. VOORHEES,
W. J. HERDMAN,
J. B. GRISWOLD,
J. M. SNOOK,
C. T NEWKIRK,
Special Committee on Legislation.

(State of Michigan; File No. 243; Senate Bill No. 146; introduced by Senator Barnard, February 12, 1895; referred to the Committee on Public Health; ordered printed for the use of the committee, March 12; reported, amended, ordered reprinted, and placed on the general order, April 10.)

A bill to establish a board of registration and to regulate the practice of medicine, and to repeal acts and parts of acts in conflict herewith.

SECTION 1. The People of the State of Michigan enact: The Governor

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shall appoint nine (9) physicians, residents of this State, from some recognized medical college, and in good standing, and shall have been practicing their profession for a period of at least six (6) years, who shall constitute a board of registration in medicine. Such persons shall be appointed in three (3) classes, each class to consist of three (3) persons. The first class shall be appointed and hold office for a term of three (3) years, the second for the term of two (2) years, the third for the term of one (1) year, respectively, beginning with the first day of October in the present year, and until their successors are appointed; and thereafter the Governor shall appoint in such manner as to maintain the representation mentioned, and before the first day of October in each year, three (3) persons qualified as aforesaid, to hold office for the term of three (3) years from the first day of October next ensuing. No member of said board shall belong to the faculty of any medical college or university, or be financially interested in the manufacture of drugs, or the practice of pharmacy. Any member of said board may be removed from office by the Governor. Vacancies in said board shall be filled in accordance with the provisions of this act for the establishment of the original board, and persons appointed to fill vacancies shall hold office during the unexpired term of the member whose place he fills.

SEC. 2. The members of said board shall meet on the second Tuesday of October next, at the State Capitol at Lansing, and shall immediately proceed to organize by electing a President and Secretary, who shall hold their respective office for the term of one (1) year, and who shall have the power to administer oaths. The Secretary shall give to the Treasurer of the State a bond in the penal sum of five thousand ($5,000) dollars, with sufficient sureties, to be approved by the Governor, for the faithful discharge of the duties of his office. The said board shall hold three (3) regular meetings in each year; one on the second Tuesday of March, one on the second Tuesday of July, and one on the second Tuesday of November, and such additional meetings at such time and places as it may determine.

SEC. 3. After October 1, 1895, all persons engaged in the practice of medicine, in any of its branches, and all who wish to begin the same in this State, shall apply to this board to be registered, and for a certificate of such registration. This application shall be granted in such applicants as shall give satisfactory proofs of being twenty-one years of age, and of good moral character, only upon compliance with some one of the following set of conditions.

(1) The applicant shall be registered and receive a certificate of registration, if the applicant shall present proof of having already registered under the law of 1883, as amended in 1887, entitled "An act to promote public health;" or the applicant shall present proof of having actually practiced medicine continually for at least five years in this State immediately preceeding the first day of October, 1895. The fee for applicants of this class shall be one ($1.00) dollar.

(2) The applicant shall be registered and given a certificate of registration if he or she shall be the lawful possessor of a diploma from a medical school whose requirements for graduation are equal to the following, viz.: A sufficient preliminary education or examination, three (3) full years of medical study, including three (3) full courses of not less than six (6) months each pursued in

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three different calendar years, and a curriculum covering anatomy, physiology, chemistry, pathology, materia medica, therapeutics, toxicology, histology, hygiene, practice of medicine, surgery, obstetrics, gynecology, diseases of the eye and ear, bacteriology, and medical jurisprudence. Provided, That any person having a diploma from any recognized medical school issued previous to 1889 shall be allowed to register under this act. No foreign diploma which does not give the holder the right to practice in the country in which it was issued shall entitle the holder to practice in this State without examination. The fee for registration from applicants of this class shall be five ($5) dollars.

(3) The applicant shall be registered and given a certificate of registration if he or she shall satisfactorily pass an examination before the board upon the subjects enumerated above, said examination to be conducted as follows.

(a) The applicant shall pay a fee of twenty-five ($25) dollars prior to the examination.

(b) The examination shall be in writing, oral, or both.

(c) The questions on all subjects, except in materia medica and thereapeutics, shall be such as may be answered in common by all schools of medicine.

(d) The applicant shall be examined in materia medica and therapeutics by those members of the board belonging to the same school as the applicant, so far as possible, and no applicant shall be rejected because of his adherence to any particular system of medicine.

(e) An average percentage of at least seventy-five (75) per cent shall be required from every candidate. No additional fee shall be charged for the registration of those who successfully pass such an examination.

(4) The applicant shall be registered and given a certificate of registration, if he or she shall present a certified copy of certificate of registration, or license, which has been issued to said applicant in another state or country, where the requirements for registration shall be found equivalent to those of this act. The fee for registration from applicants of this class shall be five ($5) dollars.

SEC. 4. Any applicant refused a certificate by said board may appeal from the decision of said board to the appointing power thereof, who may thereupon appoint a medical committee of review, consisting of five (5) members, two (2) from the regular school, and one each of the other schools of practice. Said Committee of Review shall investigate the appeal of the said applicant, and determine whether a certificate should issue. If said committee, by majority vote, reverse the determination of the board, the board shall thereupon issue a certificate to the applicant. Before said appeal is sustained the applicant shall give security for costs.

SEC. 5. The person receiving a certificate of registration shall file the same, or a copy thereof, with the county clerk in the county where he or she resides, and said clerk shall file said certificate, or a copy thereof, and enter proper memorandum thereof in a book to be provided and kept for that purpose. And said county clerk shall each year furnish to the secretary of said board a list of all certificates filed in his office during the preceding year, and upon notice to him of the change of location or death of a person granted a certificate, or upon the revocation of the certificate granted to such person, said county clerk shall

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enter at the appropriate places in the record kept by him, a memorandum of said fact; so that the records so kept by said county clerk shall correspond with the records of said board, so kept by the secretary thereof. In case a person having thus filed a certificate shall move into another county of the State, he or she shall procure from said county clerk a certified copy of said certificate, and file the same with the county clerk of the county to which he or she shall so remove. Said county clerk shall file and enter the same with like effect, as if the same was the original certificate.

SEC. 6. All moneys received by said board shall be paid to the State Treasurer monthly, and shall be credited to the general fund of the State, and a receipt for the same shall be filed by the secretary of the board in the office of the Auditor General. The compensation, incidental, and traveling expenses of the board shall be paid from the treasury of this State, and from such fund only. The compensation of members of the board shall be five (5) dollars each for every day actually spent in the discharge of their duties, and such additional compensation in the case of the secretary as the board may deem proper, and three cents (3c.) per mile each way for necessary traveling expenses in attending the meetings of the board, and in no case shall any more be paid than was actually expended. Such compensation, and the incidental and traveling expenses, shall be approved by the board and sent to the Auditor General of the State, who shall draw his warrant upon the State Treasurer for the amounts due, as in case of other bills and accounts, under the provision of law. Provided, That the amounts so paid shall not exceed the amount received by the Treasurer of the State from the board in fees, as herein specified, and so much of said receipts as may be necessary is hereby appropriated for the compensation and expenses of the board as aforesaid.

SEC. 8. The board shall keep a record of the names of all persons registered hereunder. and shall collect from the various county clerks of the State all registrations made under the laws of 1883, in order that the record of the registered physicians may be as complete as possible. The board shall also keep a record of all moneys received and disbursed by said board, and said records shall always be open to inspection in the office of the Secretary of State. Said board shall annually report to the Governor on or before the first day of January in each year the condition of medicine or surgery in the State, which report shall contain a full and complete record of all its official acts during the year, and shall also contain a statement of the receipts and disbursements of the board.

SEC. 9. Any person who shall practice medicine or surgery in this State contrary to the provisions of this act shall be deemed guilty of a misdcmeanor, and upon conviction thereof shall be punished by a fine of not more than one hundred dollars, or by imprisonment in the county jail for a period of not more than ninety days, or both fine and imprisonment, for each offense. It shall be the duty of the respective prosecuting attorneys of the counties of this State to prosecute violations of the provistons of this act upon information furnished by the records of the county clerk, or a member or members of said registration board, or by any other person entitled to credit.

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SEC. 10. This act shall not apply to the commissioned surgeons of the United States Army, Navy, or Marine Hospital Service, in actual performance of their official duties, or to regular licensed physicians or surgeons from out of the State in actual consultation with physicians of this State, nor to internes studying in regularly incorporated hospitals, to dentists in the legitimate practice of their profession, or to temporary assistance in cases of emergency, or to the domestic administration of family remedies.

SEC. 11. If any person shall append the letters "M. D.," or "M. B.," or prefix the title "Dr." in a medical sense to his or her name, it shall be *prima facie* evidence of practicing medicine and surgery within the meaning of this act.

SEC. 12. It shall be the duty of the supervisors at the time of making the annual assessment in each year, to make out a list of all the physicians residing within his township, village, ward, or city, with the name, age, sex, and color of each, and the length of time each has been engaged in practice. Such list shall be returned by the supervisor to the county clerk, and by the clerk recorded in the book in which are kept the records of the board, and annually, on or before the first day of January, such clerks shall furnish certified lists of of the same to the secretary of the State board.

SEC. 13. An act entitled "An act to promote the public health," approved June 6, 1883, is hereby repealed.

DR. LEONARD. I move that the report be accepted, the committee continued, and authorized to correct whatever clerical errors there are in the bill, and present it to the next legislature.

DR. SHURLY. I second that motion, and incidentally wish to take a moment of time in laying one or two points before the profession. It ill becomes a citizen like myself to criticize the Executive of the State. It does seem exceedingly strange to us that the Chief Executive should take upon himself the responsibility of vetoing a bill which, as you know, is not for the benefit especially of a class of persons called physicians; but for the benefit of the whole community. As a result of his action the people have to tolerate for at least two more years the most ignorant and felonious set of human beings that belong to the criminal class. Dr. Voorhees, myself, and others were assured that the bill would go through, and the Governor practically intimated that he would sign the bill with these corrections; and now that on account of a word or two the Chief Executive is to hang such an important meas-

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ure is one of the worst calamities which this State has suffered since I have lived in it. Governor Rich has been a friend of mine, and I have had great confidence in him, and I still feel that his motives were purely honest ; but it is such a mistake that I feel he should receive the criticism of the profession. (Applause.) He has failed in his duty; and I cannot see why he has committed such an error as this. It is wrong to the people of the State of Michigan and to the profession to encourage quackery; it is wrong to the worthy young men who are to take our places; it is an injustice of the gravest kind.

Considerable discussion arose as to whether the bill should or should not be read, and it was finally decided to have Dr. Voorhees read that portion upon which it was vetoed.

DR. CARSTENS. I have a resolution to offer in reference to this point:

WHEREAS the Legislature has passed a bill regulating the practice of medicine, placing the State of Michigan in the ranks of other states, and preventing other states and Canada from dumping in our midst all the charlatans disgraceful to the profession ; and

WHEREAS this law was worked through the Legislature by the untiring efforts and the fine tact of Dr. George V. Voorhees ; Therefore be it

RESOLVED that the Michigan State Medical Society herewith tenders a vote of thanks to Dr. G. V. Voorhees for the zeal and talent he has displayed in urging upon the Legislature the passage of this bill.

Seconded.

DR. BOISE. I move, as an amendment, that the other gentlemen who have spent time in the same direction be included in the vote of thanks.

Seconded.

DR. FROTHINGHAM. I move, as a substitute, that the dif-

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ferent committees or societies be included who have urged this bill through, without giving any personal mention.

Seconded.

DR. CARSTENS. I worded the resolution as I did for the simple reason that there was but one man on the ground all the time who did most of the work, and this was Dr. Voorhees, and he is personally entitled to a vote of thanks.

DR. MACLEAN. I want to make one correction. The resolution sounded a little rough to my ears, particularly in regard to charlatans. There are no charlatans in the profession. We do not admit fellows who come from other states without diplomas, and that ought to be corrected.

DR. CARSTENS. I accept the grammatical improvement of my friend Maclean.

DR. FROTHINGHAM. I withdraw my motion in favor of Dr. Boise.

The motion, as amended, was then put and carried.

DR. CARSTENS. I think, hereafter, we ought to do a little more work, not after a man is elected, but before he is elected. Every doctor in the State—regular, homeopath, eclectic, man and woman, should go before the candidates for the Legislature and candidate for governor before they are elected, no matter what party nominates them and say: "Will you vote for a law like that? If so, you will get our support." They will promise it, and they will pass a law without any trouble. As Dr. Greene says, we are too modest; we do not claim enough. If we claimed half as much as the lawyers did, we would have the earth. (Laughter). I make that suggestion. Let every one of us work in that direction.

The President called for the report of the Committee on Recommendations of the President's Address of last year, Dr. R. J. Kirkland, Chairman.

DR. MACLEAN. This report was sent to me as a member of the committee, and I will have it read by the Secretary.

The Secretary then read the report, as follows.

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The committee to which, last year, the President's address was referred, begs leave to report as follows.

To the Members of the Michigan State Medical Society :

To everyone who recognizes the advantages resulting from union of large numbers, or who carries the interests of his profession close to his heart, constantly alert to the faintest breath that may affect its welfare, the paper makes a direct appeal. In the plan proposed there is promise of professional unification, much greater than that obtaining in our present National Association. Accordingly, the Society is recommended to endorse it. It is also recommended that a committee of three be appointed and given authority, (with Dr. Boise as chairman, and the Secretary another member,) whose duty it shall be to have the scheme presented to every state and local medical society in the country for consideration, with the request that it be formerly acted upon, and a report of the result returned.

From such data a fair idea of the general sentiment could be obtained, and an estimate made as to the fate of any movement that might be thought of along these lines.

Respectfully submitted,

R. J. KIRKLAND,
DONALD MACLEAN,
GEORGE DOCK.

DR. MACLEAN. With regard to that report, I might say this, that during the last year or two by a sort of general consent there seems to be developing a growing disposition to secure some such action as was recommended by Dr. Boise in his address last year, which is the subject and action of this committee. We have heard already this morning that President Cleveland has made a strong recommendation in that direction, and it has come from various sources. In my presidential address at Baltimore, before the American Medical Association, I referred to the matter of a public health bureau, the medical head of which shall be a Cabinet Officer, and it was enthusiastically accepted by the association, and

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the suggestion ordered to be forwarded to the President of the United States. It seems to me that is the direction in which we should work, and it is the most probable, reasonable, effectual method of securing unity of action and very valuable results for the profession. If this committee, which I hope will be appointed by the chair, will set to work energetically, constantly, and enthusiastically to accomplish that object; if they set some definite object before their eyes and work towards it and endeavor to draw all the medical associations of this and other states into harmony with their action and secure their allegiance and assistance, I cannot but believe and think that the result would be very soon brought about. It would place the profession immediately on a status that it has never yet occupied; it would give the profession power in so many direction to work for the good of mankind and for ourselves. It seems to me, it is the most reasonable, feasible, attainable way of accomplishing this object, and I would beg to suggest that to the committee which is to be appointed.

On motion of the Secretary the report was accepted and adopted.

Dr. Maclean then moved that a committee be appointed by the President to carry out the object outlined.

Carried.

Under the head of "Miscellaneous Business," Dr. Maclean arose and said: I have a matter to bring up under this head which I consider of great importance, and in so doing I wish to refer to a little history. A year or two ago this Society, through one of its oldest members, adopted a peculiar procedure in regard to the election of the President, First Vice President, and Secretary. As it was a new proposition it did not receive very extensive consideration, and it was carried without opposition. But experience teaches all sorts of people, even doctors, and our experience with this method has shown that it is an exceedingly unfortunate one. In saying that, I want you to understand that I cast no reflection on the officers who were elected last year. So far as I am

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personally concerned, I was perfectly satisfied, and I think every member of the Society was. It is the method of electing officers; it has never been done before. I have discussed it with many members freely, and I have not met one this year who has said anything in its favor. Every one has condemned it, and express a strong desire to see it rescinded. In view of that fact, last year, at our meeting in Lansing, I made a motion that we go back practically to our original method of electing the President, First Vice-President, and Secretary, by nominating them from the floor of the house in a proper, legitimate, parliamentary manner. I do not wish to cast any reflections upon any one for it; but it seems that I did not put my motion in writing at the meeting; consequently it does not appear in the minutes of the published proceedings on account of its not being presented in proper form, although the members of the Society understood what I meant. It was a mere oversight on my part in not putting the resolution in writing. If the society has made a mistake, it ought to rescind its action and return to the proper, parliamentary method of electing its officers. It has been satisfactory in the past, and I am sure it will be so in the future. I will ask the Secretary to read the resolution as it is recorded in the Transactions.

The Secretary then read the resolution referred to, as follows.

"Doctor Donald Maclean adversely criticized the new method of election of President, Vice President, and Secretary, and moved that the former method of election be returned to. Inasmuch, however, as Doctor Maclean failed to state what sections of Constitution and By-Laws he wished changed, and how he wished them to read, the Secretary has been unable to formulate any amendment from Doctor Maclean's motion. Further, as no amendment was submitted in writing, as required by Article VII, Section 1 of the Constitution, and Article VI, Section 1 of the By-Laws, no proper notice of the amendment was given; and Dr. Maclean's motion, conse-

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quently, does not stand as a properly proposed amendment."

After reading the above the Secretary said: I regret to state that Dr. Maclean feels that I treated him unjustly in this matter. It is true he was accessible to me after the meeting, but I did not take up that part of the stenographer's report of the proceedings to prepare "copy" for the printer until after all the work of the sections was printed. As soon as I took up the stenographer's minutes of the general sessions and compared them with the documents which I had, Dr. Maclean was then inaccessible to be, he being in California. I then consulted Dr. Henry, a friend of Dr. Maclean. I said to him that Dr. Maclean wished an amendment made to change the present method of election of officers, which involved several sections of the Constitution and By-Laws, and I felt it was a delicate matter to attempt to revamp sections of the Constitution and By-Laws, and that it was incumbent on me to touch nothing, as I had no means of knowing how Dr. Maclean wanted his amendment to read. I said to Dr. Henry, "What can I do in the matter?" He replied, "Simply make an explanation in the Transactions about it." I did so, making the explanation I have read to you. I assure Dr. Maclean and the Society that I acted in good faith in this matter in discharging what I considered my duty in the matter.

DR. CARSTENS. I move that Dr. Maclean be permitted to write out his amendment in detail, and hand it to the Secretary, so that it can be voted on at to-morrow morning's session.

Seconded.

DR. CARROW. I would inquire, before the motion is put, if we are acting in accordance with the Constitution in doing this?

DR. MACLEAN. The motion is simply to give me time to put it in writing.

Carried.

DR. A. M. HUME. I wish to give notice of an amendment or addition to Section 5, Article 3 of the By-Laws, as follows, and wish it to lay over in the regular form.

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"All objections to or charges against candidates for membership made previous to the report of the Committee shall be made in writing and filed with the Committee on Admissions; said objections or charges becoming thereby the property of said committee and their successors in office."

This amendment was presented in writing, and lies over for one year.

DR. CARSTENS. I move that the amendments to the Constitution which are on the program be now taken up.

Carried.

On motion of Dr. Carstens, the following amendment was adopted:

To change Article 5, Section 1, of the Constitution so as to read—"To facilitate professional and scientific work, three sections are established, namely:

First,—A Section on Medicine and Obstetrics;

Second,—A Section on Surgery and Ophthalmology;

Third,—A Section on Abdominal Surgery and Gynecology;"

On motion of Dr. Maclean the following amendment was laid on the table.

To add to Article 2, Section 1, of the Constitution, "Provided that no alien can become a member of this Society."

DR. LEONARD. The Society is now thirty years old. The older we get the rarer our volumes of Transactions become. There are several places where the Transactions are secure from damage and fire, and I move, sir, that copies, not to exceed twenty-five, be furnished the libraries of the State for preservation, and that the Secretary be instructed to issue the number of volumes necessary for the members of the Society.

Seconded.

DR. HERDMAN. I would ask the Secretary how many of of the older volumes he has.

THE SECRETARY. The Society does not possess a full set of its own Transactions. There are at least two years of which your Secretary has none, and it is impossible to supply

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any of the libraries with a full set of our Transactions. We have sent copies of the Transactions to the Smithsonian Institute, to the Department of State at Lansing, to the Surgeon General's office at Washington, to the University library at Ann Arbor, to the library of the Agricultural College, and copies have been irregularly sent to two or three public libraries in the State, whence intimations have come that they would like them. I have had it in my mind for some time to call the attention of the Soctety to the fact of a lamentable want of Transactions, and if any of the members have old broken sets they might assist the Secretary to complete his files for the Society. In this connection, I will say, I have had an application during the year from the newly formed Medical Library Association at Grand Rapids for Transactions, and have supplied them with a number of copies; and they have also applied to the Society to be furnished with copies of Transactions of other societies that come to this Society, which the Society does not permanently preserve or care for.

DR. HERDMAN. What is the date of the first issue of our published Transactions in book form?

THE SECRETARY. The first date, I believe, is 1868, or 1869, which includes the proceedings of 1866–67.

Dr. Leonard's motion was then put and carried.

DR. CONNOR. I move that the Secretary be authorized to secure by purchase, or otherwise, the missing links in the volumes of Transactions, and preserve them in his archives.

Carried.

DR. CARSTENS. I wish to bring up the motion I previously made. I move that a committee of three be appointed by the Chair to consider the question whether other fluids or means cannot be employed by undertakers than arsenic for embalming dead bodies. I want it distinctly understood that I do not wish to be a member of that committee.

Seconded.

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DR. SMITH. I move to amend that Dr. Clark be made a member of that committee.

DR. CARSTENS. I accept that.

DR. BREAKEY. I wish to say a word in reference to this matter. I would remind the Society in the action first taken that there was contemplated something more than the injection of fluids into the dead body. The first thing undertakers do, when called upon, is to thrust an instrument through the abdominal or thoracic wall, or some other part, and through a tube inject some fluid which they call "embalming fluid." It is not only the liquid they inject but the wound they make. It is a dissection of the dead body. The Washtenaw County Medical Society drafted resolutions to the effect that no person, an undertaker or any one else, should be permitted to make a section of a dead body without permission of the legal custodians of that body, or the friends; or, in the absence of the legal custodians, of some officer representing the local Board of Health. And the reason for such restriction is this: (1) the injection of liquids into a dead body renders a post-mortem examination futile; (2) even a puncture made by the undertaker might be mistaken for a wound. A case of this kind occurred in the State many years ago. A man died, his body was taken to New York and buried there. He was a beneficiary of some mutual insurance company. When the insurance was applied for, the body was exhumed and the friends of the dead man found the wounds that had been made by the undertaker, and it was with some difficulty that the money was obtained. This case illustrates the importance of preventing mutilation of the dead. What right has an undertaker to thrust an instrument into a dead body? The law prohibits it, and under the old law bodies were permitted to remain for hours without being moved for fear there might be some suspicion as to the cause of death. Action in this matter should contemplate something more than the injection of liquids.

DR. GARSTENS. If the gentleman who seconded my motion

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will permit me, I will change it thus: That Drs. Clark, Vaughan, and Breakey be appointed as a committee to consider this question in all its bearings, and report at the next meeting.

Seconded.

Dr. Breakey asked to be excused as a member of this committee, but the President failed to take cognizance of it.

Dr. Carstens' motion, as amended by himself, was carried.

THE SECRETARY. I have a resolution to offer. It is this: That for the safety of the Society's archives, the Secretary be instructed to keep in his possession, so far as possible, at least four copies of the Transactions of each year, and that, when the number dwindles down to four, none of those remaining be parted with.

Carried.

DR. BOISE. I move that Dr. W. H. Young, who is down on the program to deliver his address this morning, be asked to do so this evening.

Carried.

On motion the Society adjourned.

EVENING SESSION

THURSDAY, JUNE 6TH—7:30 O'CLOCK P. M.

The annual addresses were delivered as follows.

Surgery—Subject: The Poetical in Surgery. Schuyler C. Graves, Grand Rapids. (See page 40.)

Medicine—Subject: Current Errors Respecting Insanity. C. B. Burr, Flint. (See page 15.)

Gynecology—Subject: The Sphere of the General Practitioner in Gynecological Cases. W. H. Young, Nashville. (See page 46.)

The Society then adjourned to a reception at the residence of Hon. S. O. Fisher.

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SECOND DAY—GENERAL SESSION.

FRIDAY, JUNE 7TH.

The Society was called to order at 11 a. m. by the President.

The Committee on Admissions made a further report, in which they recommended that Dr. E. W. Jenks, an honorary member, be made an active member.

On motion of Dr. Boise, the report was adopted.

THE PRESIDENT. We will now listen to the report of the Committee on Finance.

Dr. Breakey, chairman of the committee, made the following report.

Mr. President and Members of the Michigan State Medical Society:

The Finance Committee respectfully report that they have carefully examined the books, and accounts, and vouchers of the Treasurer, and find them correct.

We congratulate the Society on the excellent financial exhibit made in the Treasurer's report. The balance in the treasury in 1894 was $333.55; balance on hand, $344.80.

We urge the adoption of the recommendations of the Treasurer as to the continuance of the present method of registration and voting, and also the present plan of sending out Transactions to those members only who have paid dues, as securing more prompt payment of dues, lessening expenditures, and promoting a healthier state of the treasury.

Signed,

W. F. BREAKEY,
W. T. DODGE,
H. J. CHADWICK,
Committee.

On motion of Dr. Maclean the report was adopted.

The report of the Committee on Nominations was then read by Dr. Hagadorn, as follows.

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Your Committee recommends :

For: *Second Vice-President*, R. W. Erwin, Bay City;
Third Vice-President, F. B. Tibbals, Detroit;
Fourth Vice-President, F. G. Novy, Ann Arbor;
Treasurer, W. G. Henry, Detroit.

Members of Judicial Council for Three Years, Henry B. Baker, Lansing; Frances A. Rutherford, Grand Rapids; Wm. T. Dodge, Big Rapids.

The Committee also recommends the appointment of delegates to the American Medical Association by the same method as last year.

Place of meeting in 1896, Mt. Clemens.

Dr. Donald Maclean having given notice in 1894 of his intent to offer an amendment which would obviate the objectionable features of the present plan of election of officers, the following was accepted by the Society, on motion, as the intent of Dr. Maclean's notice given in 1894, and was by almost unanimous vote passed and adopted, so amending Article III, Section 9 of the Constitution that it now reads:

SEC. 9. Nominations for President and Secretary shall be made the first order of miscellaneous business at the general session on the morning of the first day of the annual meeting. Under no other circumstances shall nominations or announcement of candidates be made in open session.

On motion the report was adopted.

DR. BAKER. I desire to make an announcement. I was informed a few days since that the State department was overhauling its books and was going to send to the waste paper dealer a large number of publications, and among them are several volumes relative to vital statistics and reports of the State Board of Health, and it occurred to me if there are any members of the Society who wish some of these volumes, they can obtain them from the Secretary of State upon application. There are a few hundred copies of reports of the State Board of Health, which I understand the State department will sell for old paper unless they can be dispcsed of, and they are for the years 1883, 1886, 1887, 1888, and 1889. If any of the members or any other persons interested in public health wish to complete their sets of reports of the

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State Board of Health, they can be had on application to the Board.

THE SECRETARY. I have an amendment here which is offered by Dr. H. O. Walker, of Detroit, as follows, its intention being to abolish the present plan of work in Sections.

To amend Article V—Division into Section—so as to strike out the whole of the existing Article V and substitute the following:

"Article V—Scientific work.

To facilitate professional and scientific work all papers presented to the Society shall be read before the whole Society assembled for scientific session."

Also to strike out Section 4 of Article VI of the By-Laws.

This amendment was submitted in writing and laid over for one year.

DR. MACLEAN. I rise to express my strong desire that that resolution shall not prevail.

DR. BOISE. I wish to move that we extend a vote of thanks to the trustees of the M. E. Church for allowing us the use of the church for our meetings; and that we vote to them an honorarium of seventy-five dollars for its use.

Carried.

DR. BOISE. I also wish to move that we extend a vote of thanks to the Hon. S. O. Fisher and his wife for the elegant reception tendered us last evening at their residence; also that we extend our thanks to the retiring officers and executive committee, the Bay City and Masonic Clubs for their courteous invitation, as well as to the press and citizens of Bay City.

Carried.

The Committee on Admissions recommended Dr. Wm. N. Wishard, of Indianapolis, as an honorary member, and on motion he was elected as such.

THE SECRETARY. I have three bills which are a little unusual, and perhaps they might be passed upon and ordered paid by the Finance Committee of the Society in the usual

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way. I desire to call attention to the fact that, on account of uncalled for opposition to the admission of certain applicants to the Society, unnecessary expense was entailed, and these bills are for the expense of the members of the Committee on Admissions in investigating the alleged charges against applicants.

On motion of Dr. Maclean these bills, after the amounts were read, were ordered paid.

DR. BURR. I move that fifty dollars be tendered to Dr. Voorhees for services rendered to the Society.

Seconded.

THE PRESIDENT. What is the fifty dollars for? I do not know that there is anything to be kept secret, and if a man is entitled to fifty dollars, we should know what it is for.

DR. BURR. It is for services rendered in behalf of medical legislation at Lansing. Dr. Voorhees has spent considerable time and a large amount of money in working for the passage of this law, and it seems to me the Society should in some way re-imburse him for the actual money expended by him. I desire simply to have my motion go on record in the way I made it, if there is no objection.

DR. MCGRAW. I heartily second the motion. I believe the expense is perfectly legitimate. Dr. Voorhees has looked after the interests of the profession at Lansing, and fifty dollars would not begin to recompense him for his labors, or for the expense he has incurred in trying to get medical bills through; and I should not hesitate to let it go on record, and I hope there will be no vote against this motion.

DR. MULHERON. There is nothing to be kept secret in this matter. Let it go on record.

Carried.

The report of the Nominating Committee, giving the result of the election of President, First Vice-President, and Secretary was then made as follows.

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VOTE FOR PRESIDENT.

Whole number of votes cast, 139.

V. C Vaughan	72
Hugh McColl	66
L. E. Best	1
	139

VOTE FOR SECRETARY.

Whole number of votes cast, 133.

C. H. Johnston	124
C. W. Hitchcock	8
R. H. Spencer	1
	133

On motion the report was adopted, and Dr. Victor C. Vaughan, of Ann Arbor, was declared President for the ensuing year; Dr. Hugh McColl, Lapeer, Vice-President; Dr. Collins H. Johnston, Grand Rapids, Secretary.

The President appointed Drs. McGraw, Boise, and Herdman to escort the President-elect to the chair.

THE PRESIDENT. It gives me great pleasure to introduce to you Dr. Vaughan, your next President. He really needs no introduction at my hands, because he is well known to you. [Applause.]

Dr. Vaughan was warmly received. He said:

Ladies and Gentlemen of the Michigan State Medical Society:

I must thank you very heartily for the compliment and the honor which you have given me. Certainly the greatest honor that anyone can have is to be honored by those who know him best. I think I have never felt more highly honored than I do to-day, because all of you have known the whole of my professional life, and you are qualified to judge of it better than anyone else. I think that any man who is a member of this Society is or should be worthy of the office of President. I belong to one scientific society in which the President is called the chief servant. He is elected by lot, and when once a man is elected, then his name cannot get into the hat next year. In that society there are no politics;

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there are no nominating speeches; there is no electioneering; and the work that is done is excellent.

I want to say, ladies and gentlemen, that so far as shall be in my power I will do everything to make the work of the coming year worthy of the Michigan State Medical Society. In this I know that I shall have your help and your support. I thank you very much. [Applause.]

DR. WELSH. I move that an honorarium of two hundred and fifty dollars be given the retiring Secretary for his services during the past year.

Carried.

THE SECRETARY. I would suggest, as the Treasurer is absent through sickness, and inasmuch as his work has been most efficiently and faithfully done during the year, that an honorarium be voted him.

DR. BOISE. I move that an honorarium of one hundred dollars be given to the Treasurer, Dr. Henry.

Carried.

The President appointed the following committees:

On Professional Organization—To carry out the recommendations contained in the report of the committee to which was referred the President's address in 1894:

EUGENE BOISE, Grand Rapids, Chairman.
COLLINS H. JOHNSTON, Grand Rapids.
R. J. KIRKLAND, Grand Rapids.

To Amend the Constitution and By-Laws—To provide for a Board of Examiners to inquire into the professional qualifications of all future applicants for membership who do not hold regular diplomas:

C. HENRI LEONARD, Detroit, Chairman.
D. W. C. WADE, Holly.
H. B. OSBORNE, Kalamazoo.

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On Program for 1896:

V. C. VAUGHAN (*ex-officio*).
D. MILTON GREENE.
A. E. BULSON.
E. G. MINAR.
J. B. WHINERY.
D. F. STONE.
A. P. BIDDLE.

There being no further business, the Society, on motion, adjourned.

During the session the following were recommended by the Committee on Admissions, and elected to full membership:

Alton, Robert W., Portland.
Bailey, O. L., Chesaning.
Baird, Thomas A., Bay City.
Breakey, James F., Pontiac.
Bristol, Miles C., Bay City.
Burleigh, Geo. W., Battle Creek.
Callow, F. H., Mt. Morris.
Clark, C. W., Caro.
Felch, Theodore A., Ishpeming.
Fletcher, E. A., Detroit.
Fletcher, F. E,, Lake Linden.
Foote, John R., Bay City.
Gallagher, M., Bay City.
Garvin, Wynne C., Millington.
Grigg, Arthur, Standish.
Hauxhurst, John W., West Bay City.
Hubbard, C. D., Parmo.
Hudson, J. H., Merrill.
Houghton, E. M., Detroit.
Jones, Geo. W., Imlay City.
Kerr, William, Bay City.
Klingmann, Theo. C., Bay City.
Landon, H. B., Bay City.
Lang, A. B., Sault St. Marie.
Livingstone, P. J., Caro.
McClintock, Chas. T., Ann Arbor.
McCormick, C., Owosso.
McLurg, John, Bay City.
Martin, F. W., Westphalia.
Miller, Carroll E., Cadillac.
Parker, Walter R., Detroit.
Parmeter, Edward L., Albion.
Price, Adam, Almont.
Riley, W. H., Battle Creek.
Sawyer, Walter H., Hillsdale.
Schell, L. E., Detroit.
Scully, M. C., Vernon.
Smith, Mary C., Grand Rapids.
Stewart, Peter, Hadley.
Stone, Geo. W., Metamora.
Sutherland, C. J., Clarkston.
Sutherland, E. D., Bay City.
Swanton, L., Reed City.
Whinery, J. B., Grand Rapids.
Winter, J. A., Detroit.
Yerex, D. V., Imlay City.

Thomas M. Williamson, Saginaw, East Side, was elected to membership, but forfeited it through non-payment of fees.

Edward W. Jenks, Detroit, was transferred from the honorary to the active list at his own request.

CHARLES W. HITCHCOCK,
General Secretary.

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CONSTITUTION AND BY-LAWS

OF THE

MICHIGAN STATE MEDICAL SOCIETY.

CONSTITUTION.

1895.

ARTICLE I.

This Association shall be called the "Michigan State Medical Society," and shall be composed of resident, honorary, and corresponding members.

SECTION 1. The Society shall constantly have in view:

1. The association of the profession for the purpose of mutual recognition and fellowship.

2. The maintenance of union, harmony, and good government among its members, thereby promoting the character, interest, honor, and usefulness of the profession.

3. The cultivation and advancement of medical science, and of medical literature, and the elevation of the standard of professional education.

ARTICLE II—MEMBERS.

SECTION 1. The resident members shall be regular practitioners of medicine and surgery in the State of Michigan, who shall be elected by vote of a majority at any regular meeting, their eligibility having been previously reported upon by the Committee on Admissions.

SEC. 2. Honorary members shall only be admitted by a vote of two-thirds of the members present at the regular meet-

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ing, having been first recommended by the Committee on Admissions. The whole number of honorary members shall not exceed one hundred.

SEC. 3. Corresponding members may be non-residents of Michigan, and shall be elected by a two-thirds vote at any regular meeting. having been first recommended by the Committee on Admissions.

ARTICLE III—OFFICERS.

SECTION 1. The officers of this Society shall be a President, four Vice-Presidents, a Recording Secretary, and a Treasurer, all of whom shall be elected annually.

SEC. 2. The president, first vice-president, and recording secretary shall be elected by ballot in a manner as hereinafter provided. The second, third, and fourth vice-presidents, and treasurer shall be nominated by the Committee on Nominations.

SEC. 3. There shall be two ballots cast by each voter, which shall be folded separately; upon one shall be written "President," and the name chosen by the voter for that office; upon the other, "Secretary," and the name chosen by the voter for that office.

SEC. 4. There shall be a locked ballot box which shall be in the custody of the Committee on Nominations, and shall be placed in or about the lobby of the hall where the general sessions are held, and shall be kept there for the reception of ballots during each general session. One or more of the Committee on Nominations shall receive the ballots and deposit the same in the box, at the same time checking the name of the voter from the registered list of those entitled to vote, which list shall have been furnished by the Secretary and Treasurer; but the name of no member shall be placed upon the list until his dues are paid in full.

SEC. 5. The polls shall close at 12 o'clock, noon, on the last day of the session, at which time the Committee on Nom-

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inations will open the ballot box, and at once proceed to canvass the vote and report the result to the meeting.

SEC. 6. The person receiving the largest number of votes on the presidential ticket shall be declared president. The person receiving the next largest number of votes shall be declared first vice-president. The ballots for secretary shall likewise be canvassed, and the person receiving the largest number of votes shall be declared secretary.

SEC. 7. In the event of a tie vote on the presidential office, the presiding officer shall submit the names of the candidates in alphabetical order to the viva voce vote of the meeting, and the one receiving the greatest number of votes shall be declared president, and the one receiving the next highest number shall be declared first vice-president.

SEC. 8. The same course shall be pursued in the event of a tie vote for secretary.

SEC. 9. Nominations for president and secretary shall be made the first order of miscellaneous business at the general session on the morning of the first day of the annual meeting. Under no other circumstances shall nominations or announcements of candidates be made in open session.

ARTICLE IV—STANDING COMMITTEES.

SECTION 1. The following standing committees shall be annually appointed by the President, and shall each consist of five members: 1st, an Executive Committee; 2d, a Committee on Finance; 3d, on Publication; 4th, on Admissions; 5th, on Necrology: 6th, on Nominations.

ARTICLE V—DIVISION INTO SECTIONS.

SECTION 1. To facilitate professional and scientific work three sections are established, namely:

First, A Section on Medicine and Obstetrics.

Second, A Section on Surgery and Ophthalmology.

Third, A Section on Abdominal Surgery and Gynecology.

SEC. 2. These sections shall hold their meetings in the

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afternoon, and the Society shall meet in general executive session in the forenoon of each day. At each annual meeting a chairman shall be chosen for each section, who shall serve for one year. A secretary shall be chosen every second year, and he shall serve for two years, and until his successor shall be elected. All papers, communications, and matters of a technical or professional nature shall be referred to the section to which they pertain: *Provided, however*, that any such paper or subject may, on vote, be considered in general session.

SEC. 3. Each section shall annually elect a member, whose duty it shall be at the next annual meeting to deliver an address before the Society in general session upon some subject pertaining to the department by which he is chosen.

ARTICLE VI—JUDICIAL COUNCIL.

SECTION 1. A Council, consisting of nine members, shall be elected by ballot, whose duty it shall be to take cognizance of and decide all questions of an ethical or judicial character that may arise in connection with the Society. Of the nine members of the Council first elected, the three first named on the list shall hold office for one year, the second for two years, and the remainder for three years. With these exceptions, the term of office of members of the Council shall be three years, three being elected annually.

SEC. 2. The said Council shall organize by choosing a president and secretary, and shall keep a permanent record of its proceedings. The decisions of said Council on all matters referred to it by the Society shall be final, and shall be reported to the Society at the earliest practicable moment.

SEC. 3. All questions of a personal character, including complaints and protests, and all questions on credentials shall, after the report of the Committee on Admissions or other presentation, be referred at once to the Judicial Council, and without discussion.

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ARTICLE VII—AMENDMENTS.

SECTION 1. A proposed addition or amendment to this Constitution shall be presented in writing, and shall lie on the table for one year, and if approved by two-thirds of the members present at a regular meeting, it shall be declared adopted.

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BY-LAWS.

ARTICLE I—MEETINGS.

SECTION 1. The regular meetings of the Society shall be held annually at such time and place as the Society may, from time to time, determine.

SEC. 2. At all meetings the presence of fifteen resident members shall be necessary to constitute a quorum.

ARTICLE II—DUTIES OF OFFICERS.

SECTION 1. The President shall preside, enforce a due observance of the Constitution and By-Laws, see that all members of committees and officers perform their respective duties, appoint all committees not otherwise provided for, give the casting vote only, sign diplomas and all other official documents requiring his signature, and perform such other duties as appertain to his office by usage and custom; also, when in his opinion the interests of the Society may be advanced, he is authorized to appoint delegates to representation in other state medical societies. All vacancies in office shall be filled *ad interim* by the President.

SEC. 2. The Vice-Presidents shall assist the President in the performance of his duties, and in his absence shall preside in order of seniority—rank being determined by the order of their election.

SEC. 3. The Recording Secretary shall keep the minutes, prepare the records of the Society for publication, receive the signature and initiation fee of newly elected members, and do such other business as shall be required, or as the Society may from time to time direct, in his department.

SEC. 4. The Treasurer shall receive all monies due the Society, and pay all bills endorsed by the Finance Committee

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and countersigned by the President, keeping correct accounts of the same, and making a full and detailed account at the annual meeting.

ARTICLE III—STANDING COMMITTEES.

SECTION 1. Standing committees shall keep regular minutes of their proceedings.

SEC. 2. The Executive Committee shall digest and prepare the business of each meeting, provide suitable rooms for the purposes of the Society, recommend plans for the promotion of its objects, and in all things protect and superintend the general interests of the Society.

SEC. 3. The Committee on Finance shall superintend the monetary affairs of the Society, inspect and audit all bills and the accounts of the Treasurer, and make such an assessment by a *pro rata* tax upon the resident members as may be necessary for the incidental expenses, which, however, shall not exceed the sum of two dollars per annum.

SEC. 4. The Committee on Publication, consisting of the secretaries of the respective sections, together with the Recording Secretary and one member appointed by the President, shall superintend the printing of such papers as may be ordered to be published, so that they may be issued upon uniform paper, under the title of "Transactions." And in the performance of their duties they are authorized to withhold from publication any papers, or parts of papers, that in their judgment will not promote the reputation and best interests of this Society; and all papers once submitted by their authors for publication, whether read or not read, shall be deemed the property of the Society, and shall not be withdrawn except with the consent of the Committee.

SEC. 5. It shall be the duty of the Commitee on Admissions. upon receiving the names of the candidates for membership, to make due inquiry, and report such as may be found worthy to the Society, which may thereupon elect them. Should the Committee fail to report upon nominations sub-

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mitted to them, any member having made such nomination may renew the same directly to the Society, in which case a vote of four-fifths of the members present shall be requisite to constitute an election.

SEC. 6. It shall be the duty of the Nominating Committee to nominate candidates for the offices of second, third, and fourth vice-presidents, and treasurer, and select the place of meeting; also perform the duties prescribed in Article III, sections two, three, four, five, and six.

ARTICLE IV—DUTIES OF MEMBERS.

SECTION 1. Any resident member vacating his membership shall thereby be divested of any right or title to any portion of the funds or other property of the Society.

SEC. 2. Every applicant for membership shall present to the Secretary his or her application duly signed, together with receipts from the Treasurer for his or her membership fee and annual dues, which in case of rejection will be returned, sign the Constitution and By-Laws; nor shall he or she be entitled to the rights of membership until the same is done.

SEC. 3. Membership dues shall be $3 per annum, and shall be payable annually. The failure of any member to pay such dues for two successive years shall be reported by the Secretary of the Society; and a failure for three successive years to pay such dues shall also be in a like manner reported, and the membership of such delinquent shall be declared forfeited and lost. Such person may be reinstated to membership by following prescribed course for admission, after payment of previous indebtedness to the Treasurer.

ARTICLE V—REGARDING THE DISPOSAL OF PAPERS.

SECTION 1. Papers read before this Society, and referred to the Committee on Publication with instructions to publish, shall be placed in the hands of the Secretary at once, or within two weeks, ready for printing; otherwise they will not appear in the Society's Transactions.

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SEC. 2. Any member reading a paper before the Society is allowed to have the paper printed in any reputable medical journal, under the statement, viz.: "Read before the Michigan State Medical Society."

ARTICLE VI—MISCELLANEOUS.

SECTION 1. These By-Laws may be suspended by a two-thirds vote at any regular meeting, and they may be repealed or amended by a similar vote, notice of the same having been given in writing at any previous meeting.

SEC. 2. As the American Medical Association requires that this Society shall endorse all district, county, city, or town medical societies before they can be represented in said Association, in order to receive such endorsement by this Society, they shall file in the office of the Secretary of this Society copies of their Constitutions, By-Laws, or Resolutions, showing that they have adopted the Code of Ethics of the American Medical Association.

SEC. 3. Rules of Order and all questions arising upon the same shall be determined by parliamentary rules, and the Code of Ethics of the American Medical Association.

SEC. 4. At the election of officers of the various sections of this Society, no member shall be entitled to vote who has not paid his dues for the meeting of the Society then in session; nor shall any member be entitled to vote for officers in more than one Section at any annual meeting.

AMENDMENTS PENDING.

Offered by A. M. Hume.

To add to Article III, Sec. 5, of the By-Laws:—All objections to or charges against candidates for membership, made previous to the report of the committee, shall be made in writing and filed with the Committee on Admissions; said ob-

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jections or charges becoming the property of said Committee and their successors in office.

Offered by H. O. Walker.

To strike out Article V. of the Constitution and substitute for it the following:

Article V—Scientific Work. To facilitate professional and scientific work, all papers presented to the Society shall be read before the whole Society assembled for scientific session.

Also to strike out Article VI, Sec. 4, of the By-Laws.

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PRESIDENTS AND VICE-PRESIDENTS

SINCE THE ORGANIZATION OF THE SOCIETY.

1866

President—
C. M. STOCKWELL.
Vice-Presidents—
A. PLATT,
J. H. JEROME,
J. H. BEECH,
E. J. BONNINE.

1867

President—
J. H. JEROME.
Vice-Presidents—
CHAS. SHEPARD,
S. G. ARMOR,
I. H. BARTHOLOMEW,
ALBERT E. LEETE.

1868

President—
WM. H. DeCAMP.
Vice-Presidents—
J. C. WILSON,
RICHARD INGLIS,
ALANSON CORNELL,
CHAS. T. SOUTHWORTH.

1869

President—
RICHARD INGLIS.
Vice-Presidents—
CHAS. T. SOUTHWORTH,
A. W. ALVORD,
WM. R. MARSH,
WM. R. BROWNELL.

1870

President—
I. H. BARTHOLOMEW.
Vice-Presidents—
WM. BRODIE,
MOSES PORTER,
WM. PARMENTER,
H. B BARNES.

1871

President—
H. O. HITCHCOCK.
Vice-Presidents—
LENORA FOSTER,
L. W. BLISS,
LEWIS M. FASQUELLE,
B. BARNUM.

1872

President—
A. B. PALMER.
Vice-Presidents—
JOHN R. WHITE,
WM. PARMENTER,
E. AMSDEN,
JAMES F. NOYES.

1873

President—
E. W. JENKS.
Vice-Presidents—
E. P. CHRISTIAN,
H. P. LANDON,
L. S. STEVENS,
F. A. RUTHERFORD.

1874

President—
R. C. KEDZIE.
Vice-Presidents—
J. H. BEECH,
J. ANDREWS,
N. W. WEBBER,
A. B. CHAPIN.

1875

President—
WM. BRODIE.
Vice-Presidents—
I. A. BROWN,
G. E. FROTHINGHAM,
H. B. SHANK,
C. W. BACKUS.

1876

President—
ABRAM SAGER.
Vice-Presidents—
FOSTER PRATT,
EUGENE SMITH,
WM. PARMENTER,
GEORGE K. JOHNSON.

1877

President—
FOSTER PRATT.
Vice-Presidents—
J. B. WHITE,
T. A. McGRAW,
H. B. BARNES,
T. H. BRIGGS.

1878

President—
EDWARD COX.
Vice-President—
A. F. WHELAN,
J. R. THOMAS,
G. S. BANKS,
E. B. DUNNING.

1879

President—
GEORGE K. JOHNSON.
Vice-Presidents—
J. R. THOMAS,
D. O. FARRAND,
WM. F. BREAKEY,
E S. SNOW.

1880

President—
J. R THOMAS.
Vice-Presidents—
E. P. CHRISTIAN,
J. W. HAGADORN,
C. J. LUNDY,
J. H. BENNETT.

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1881

President—
J. H. JEROME.
Vice-Presidents—
WM. F. BREAKEY,
A. F. KINNE,
S. S. FRENCH,
D. W. C. WADE.

1882

President—
G. W. TOPPING,
Vice-Presidents—
S. S. FRENCH,
HUGH McCOLL,
L. W. BLISS,
A. M. STEVENSON.

1883

President—
A. F. WHELAN.
Vice-Presidents—
HORACE TUPPER,
L. C. HAMILTON,
H. B. BARNES,
A. KAISER

1884

President—
DONALD MACLEAN.
Vice-Presidents—
J. PERKINS,
I. M. COOK,
GORDON CHITTOCK,
CARL BRUMME.

1885

President—
E. P. CHRISTIAN.
Vice-Presidents—
P. D. PATTERSON,
J. B. GRISWOLD,
J. H. CARSTENS,
A. W. ALVORD.

1886

President—
CHAS. SHEPARD.
Vice-Presidents—
J. P. STODDARD,
H. O WALKER,
C. T. NEWKIRK,
H. B. HEMENWAY.

1887

President—
T. A. McGRAW.
Vice-Presidents—
C. V. TYLER,
W. J. HERDMAN,
G. L. ROSE,
F. J. GRONER.

1888

President—
S. S. FRENCH.
Vice-Presidents—
C. H. LEWIS,
E. B. WARD,
S. BELKNAP.

1889

President—
G. E. FROTHINGHAM.
Vice-Presidents—
J. M. SNOOK,
H. F. LYSTER,
E. W. DAVIS,
G. D. CARNES.

1890

President—
L. W. BLISS.
Vice-Presidents—
H. B. BAKER,
D. E. WELSH,
FLORENCE HUSON,
E. T. TAPPEY.

1891

President—
GEO. E. RANNEY.
Vice-Presidents—
J. B. GRISWOLD,
A. E. CARRIER,
A. F. HAGADORN,
G. V. VOORHEES.

1892

President—
CHAS. J. LUNDY.
Vice-Presidents—
G. V. CHAMBERLAIN,
F. A. RUTHERFORD,
BENJ. P. BRODIE,
JNO. L. BURKART.

1893

President—
EUGENE BOISE.
Vice-Presidents—
A. H. KIMBALL,
C. T. SOUTHWORTH,
F. A. TOWSLEY,
J. M. COOK.

1894

President—
HENRY O. WALKER.
Vice-Presidents—
VICTOR C. VAUGHAN,
C. H. WHITE,
MINA LOGUE,
C. H. McKAIN.

1895

President—
VICTOR C. VAUGHAN,
Vice-Presidents—
HUGH McCOLL,
R. W. ERWIN,
F. B. TIBBALS,
F. G. NOVY.

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HONORARY MEMBERS.

1895.

George P. Andrews ..... Honolulu, Hawaiian Islands
N. S. Davis ..... Chicago, Ill.
Joseph Eastman ..... Indianapolis, Ind.
Johann Flintermann ..... Detroit, Mich.
Wm. H. Hingston ..... Montreal, Quebec.
Thomas Hobley ..... Amherstburg, Ont.
Henry M. Hurd ..... Baltimore, Md.
W. W. Jones ..... Toledo, Ohio.
H. M. Lyman ..... Chicago, Ill.
Walter H. Moorhouse ..... London, Ont.
James E. Nield ..... Melbourne, Australia.
‡James F. Noyes ..... Providence, R. I.
John H. Ouchterlony ..... Louisville, Ky.
Fred B. Robinson ..... Chicago, Ill.
A. Lapthorn Smith ..... Montreal, Quebec.
H. R. Tilton. U. S. A ..... St. Paul, Minn.
‡Wm. N. Wishard ..... Indianapolis, Ind.

CORRESPONDING MEMBERS.

John Boice ..... Denver, Col.
H. B. Hemenway ..... Evanston, Ill.
George A. Hendricks ..... Minneapolis, Minn.
G. V. Hilton ..... Woodlawn Park, Ill.
J. B. W. Lansing ..... Tenafly, N. J.
A. B. Lyon ..... Honolulu, Hawaiian Islands.
James F. W. Ross ..... Toronto, Ont.
Chas. N. Smith ..... Toledo, Ohio.
T. J. Sullivan ..... Chicago, Ill.

‡ Present.

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ACTIVE MEMBERS

OF THE

MICHIGAN STATE MEDICAL SOCIETY.

LIST BY COUNTY.

1895.

ALLEGAN COUNTY.

Year Joined.		Residence.	Year Joined.		Residence.
1884	Nichols, G. B.,	*Martin*	1893	Rowe, W. E.,	*Allegan*
1883	Stuch, L. F.,	*Allegan*			

ANTRIM COUNTY.

1890 Johnson, Cornelius A., *Mancelona.*

ARENAC COUNTY.

1884	‡Abbott, F. E.,	*Sterling*	1895	‡Grigg, Arthur,	*Standish*

BARRY COUNTY.

1871	Drake, A. P.,	*Hastings*	1877	‡McLeay, D.,	*Prairieville*
1894	Fuller, D. E.,	"	1890	Weaver, L. F.,	*Nashville*
1886	Lowry, G. W.,	"	1874	‡Young, W. H.,	"

BAY COUNTY.

1895	Baird, Thomas A.,	*Bay City*	1895	‡Kerr, William,	*Bay City*
1888	‡Baker, C. H.,	"	1895	Klingmann, Theo. C.,	"
1895	‡Bristol, Miles C.,	"	1895	‡Landon, H. B.,	"
1891	‡Caughlin, J. W.,	"	1895	‡McLurg, John,	"
1881	‡Erwin, Robt. W.,	"	1891	‡McTavish, D. A.,	*W. Bay City*
1895	‡Foote, John R.,	"	1886	‡Minar, E. G.,	*Bay City*
1895	‡Gallagher, M.,	"	1881	‡Newkirk, C. T.,	"
1890	Granger, G. H.,	"	1873	‡Randall, I. E.,	*West* "
1881	‡Hagadorn, A. F.,	"	1894	‡Ruggles, F. E.,	"
1895	‡Hauxhurst, J. W.,	*W. Bay City*	1881	‡Stone, D. F.,	"
1892	Hoyt, Everett A.,	*Bay City*	1895	‡Sutherland, E. D.,	"

1866 ‡Tupper, H., *Bay City.*

‡ Present. * Ex-President.

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BENZIE COUNTY.

1893 Kinne, Hudson J., *Frankfort.*

BERRIEN COUNTY

1890 Beers, Jno. S., *Derby.*

BRANCH COUNTY.

Year Joined		Residence.	Year Joined.		Residence.
1891	Avery, Eunice J.,	*Coldwater*	1884	Wood, D. H.,	*Coldwater*
1891	Marsh, Wm. C.,	*Quincy*			

CALHOUN COUNTY.

1868	Alvord, A. W.,	*Battle Creek*	1886	Greene, G. H.,	*Marshall*
1871	Briggs, T. H.,	"	1877	Kellogg, J. H.,	*Battle Creek*
1892	Bryant, Ruth O.,	"	1878	Lindsay, Kate,	"
1895	‡Burleigh, Geo. M.,	"	1892	McCullom, Emma,	"
1890	‡Dunlap, H. M.,	"	1892	Miller, Eugene,	"
1892	Fox, Paul S.,	*Athens*	1895	‡Parmeter, Ed. L.,	*Albion*
1877	*French, S. S.,	*Battle Creek*	1895	‡Riley, W. H.,	*Battle Creek*
1890	Gillette, Leon M.,	"	1890	Sands, T. E.,	"
1881	Green, G. W.,	"	1866	‡Thomason, H. D..	*Albion*

CASS COUNTY.

1889	Phillips, H. H.,	*Vandalia*	1889	Tompkins, L. D.,	*Cassopolis*
1889	Shellito, Fred.,	*Marcellus*	1889	White, M. P.,	*Dowagiac*

CHIPPEWA COUNTY.

1895 ‡Lang, A. B., *Sault Ste. Marie.*

CLINTON COUNTY.

1876	Campbell. O. B.,	*Ovid*	1894	‡Schemer, Ernest,	*Fowler*
1895	‡Martin, F. W.,	*Westphalia*	1881	‡Taylor, James E.,	*Ovid*
1890	Palmer, H.,	*St. Johns*	1891	Weller, Martin,	*St. Johns*
1892	Pollard, John W.,	"			

EATON COUNTY.

1894	Allen, G. B.,	*Charlotte*	1894	Stealey, A. R.,	*Charlotte*
1887	Bradley, J. B.,	*Eaton Rapids*	1894	Stimson, C.A.,	*Eaton Rapids*
1994	Carr, Henrietta A.,	"	1890	Swaney, H. N.,	*Grand Ledge*
1889	Green, Mary E.,	*Charlotte*	1882	‡Walter, H.,	*Eaton Rapids*
1887	Hull, Tyler,	*Dimondale*	1882	Weaver, F. A.,	*Charlotte*
1894	Newark, W. E.,	*Charlotte*	1895	‡Williams, Mary A. W.,	*Eaton Rapids*
1894	Palmer, E. C..	"			
1876	Patterson, P. D.,	"	1894	Wilson, W E.,	*Grand Ledge*

EMMET COUNTY.

1891	Calkins, Henry T.,	*Petoskey*	1884	Oven, A. G.,	*Petoskey*
1891	Dowse, C. Louise,	"			

‡ Present. * Ex-President

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GENESEE COUNTY.

Year Joined.		Residence.
1892	Bates, Noah,	*Flint*
1891	‡Beagle, Luke N.,	"
1892	Buckham, James N.,	"
1878	‡Burr, C. B.,	"
1895	Callow, F. H.,	*Mt. Morris*
1885	Chamberlain, G. V.,	*Flint*
1888	Cogshall, B.,	"
1892	Fairbank, H. C.,	"
1890	‡Gardner, E. D.,	*Davison*
1891	Gordon, Geo. G.,	*Flushing*
1894	‡Graham, H. W.,	*Mt. Morris*
1892	Handy, John W.,	*Flint*
1890	Imgram, A. R.,	*Argentine*
1892	‡Laing, John B.,	*Otisville*
1892	Locy, Lorenzo J.,	*Davison*
1892	Marshall, Jos.,	*Gaines*
1892	Matthews, Jas. D.,	"
1894	‡Strangways, W. F.,	*Flint*
1892	‡Taylor, Philander B.,	*Clio*
1885	Tibbetts, M. A.,	*Linden*
1887	Ward, W. E.,	*Fenton*
1892	Warren, Wadsworth,	*Flint*
1891	‡Wheeler, Chas. S.,	*Flushing*
1891	Willson, Jas. C.,	*Flint*

GLADWIN COUNTY.

1891 ‡Suylandt, Chas. G., *Gladwin*

GRAND TRAVERSE COUNTY.

1875 Munson, J. D., *Traverse City*

GRATIOT COUNTY.

1891 Brainerd, Ira N., *Alma*

1893 ‡Pettyjohn, Elmore S., *Alma*

HILLSDALE COUNTY.

1890 Gier, F. M., *Hillsdale*

1890 ‡Moore, E. E., "

1895 ‡Sawyer, Walter H., *Hillsdale*

HOUGHTON COUNTY.

1895 ‡Fletcher, F. E., *Lake Linden*

1883 Simonson, A. B., *Calumet*

HURON COUNTY.

1891 Ludlum, Stephen S., *Bad Axe*

1885 McDonnell, M. C., *Bad Axe*

INGHAM COUNTY.

1870 ‡Baker, H. B., *Lansing*

1878 Ballard, L. Anna, "

1890 Campbell, J. F., "

1894 ‡Culver, Sidney H., *Mason*

1890 Greene, J. N., *Leslie*

1875 ‡Hagadorn, A. D., *Lansing*

1873 Hayden, Chas. N., "

1887 Langford, G. W., *Williamston*

1886 Manley, A. C., *Leslie*

1878 Park, J. B., *Okemos*

1881 Post, J. A., *Lansing*

1866 ‡*Ranney, G. E., "

1894 Shumway, F. W., *Williamston*

1894 ‡Turner, F. N., *Webberville*

1888 ‡Voorhees, G. V., *Lansing*

1894 Weaver, J. B., "

1894 Wilbur, C. L., "

‡ Present. * Ex-President.

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IONIA COUNTY.

Year Joined.		Residence.
1895	‡Alton, Robert W.,	*Ionia*
1870	Barnes, W. L.,	"
1894	‡Conley, W. C.,	*Saranac*
1888	‡Cope, C. S ,	*Ionia*
1873	‡Dellenbaugh, C. C.,	*Portland*
1893	Ferguson, Jas. E.,	*Belding*
1893	Pinkham, J. F.,	"
1890	Strahan, D. H.,	*Pewamo*

ISABELLA COUNTY.

1883 Richmond, P. E., *Mt. Pleasant.*

JACKSON COUNTY.

1891	‡Bulson. Albert E.,	*Jackson*
1895	‡Hubbard, C. D.,	*Parmo*
1876	Lewis, C. H.,	*Jackson*
1888	Main, F. W.,	"
1876	Main, J. T.,	*Jackson*
1886	Porter, J. A.,	*Brooklyn*
1883	‡Williams, N. H.,	*Jackson*

KALAMAZOO COUNTY.

1889	Bosman, J. W.,	*Kalamasoo*
1889	‡Edwards, Wm. M.,	"
1890	LaCrone, O. A.	"
1883	‡McKain, C. H.,	*Vicksburg*
1890	McNair, R ,	*Kalamazoo*
1893	Neff, I. H.,	"
1883	‡Osborne, H. B.,	"
1887	Ostrander, H.,	"
1892	Pierce, Della P.,	*Kalamazoo*
1871	*Pratt, Foster,	"
1889	Rockwell, A. H.,	"
1880	Schaberg, H. H.,	"
1883	Snook, J. M.,	"
1878	Van Deusen, E. H.,	"
1888	‡Van Zwaluwenburg, C.,	"

KALKASKA COUNTY.

1891 Babcock, Edgar B., *Kalkaska.*

KENT COUNTY.

1880	Albright, Jos.,	*Grand Rapids*
1890	Andrus' Nancy L.,	"
1890	‡Best, L. E.,	"
1894	Best, McKendra,	"
1890	Bigelow, C. P.,	"
1889	‡Bigham, E.,	"
1880	‡*Boise, Eugene,	"
1890	Boot, T. A.,	"
1893	Brady, John,	"
1890	Burwell, A. G.,	*Byron Center*
1884	‡Catlin, H. W.,	*Grand Rapids*
1884	Chadwick, H. J.,	"
1890	Dales, O. L.,	"
1866	*Decamp, W. H.,	"
1890	DeVore, J. A.,	"
1890	Droste, C. M.,	*Grand Rapids*
1890	Earle, Bessie	"
1889	Edie, J. Orton,	"
1880	Failing, J. F.,	"
1880	Fuller, Wm.,	"
1888	‡Graves, S. C.,	"
1887	‡Greene, D. M.,	"
1892	‡Green, M. C.,	*Lowell*
1890	Griswold, J. B.,	*Gr'd Rapids*
1884	Groner, F. J.,	"
1883	Hake, W. F.,	"
1889	Hazlewood, A.,	"
1872	‡*Johnson, G. K.,	"
1890	‡Johnston, C. H.,	"
1894	Kelly C. M.,	

‡ Present. * Ex-President.

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KENT COUNTY—CONTINUED.

Year Joined.		Residence.
1893	‡King, Herbert M.,	*Gr'd Rapids*
1883	Kirkland, R. J.,	"
1890	McColl, J. A.,	"
1890	McPherson, J. A.,	"
1893	Patterson, A. J.,	"
1890	Peterson, R.,	"
1890	Pressey, A. J.,	"
1884	Pyle, Benj.,	"
1888	‡Roller, L. A.,	"
1889	Rutherford, F. A.,	"
1880	Schurtz, Perry,	"
1895	‡Smith, Mary C.,	"
1890	‡Spencer, R. H.,	*Gr'd Rapids*
1889	Strong, E. B.,	*Byron Center*
1889	Strong, H. W.,	"
1890	‡Wanty, Emma N.,	*G'd Rapids*
1886	‡Welsh, D. E.,	"
1894	Weston, A. H.,	*Grandville*
1895	‡Whinery, J. B.,	*Gr'd Rapids*
1884	White, C. H.,	"
1890	White, W. H.,	"
1890	Wisse, Isman,	"
1892	Wooster, S. R.,	"

LAPEER COUNTY.

1892	Flagler, W. S.,	*Imlay City*
1895	‡Jones, Geo. W.,	"
1873	‡McColl, Hugh,	*Lapeer*
1895	‡Price, Adam,	*Almont*
1895	‡Stewart, Peter,	*Hadley*
1895	‡Stone, Geo W.,	*Metamora*
1892	Taylor, Jos. H,	*Lapeer*
1895	‡Yerex, D. V.,	*Imlay City*

LENAWEE COUNTY.

1895	‡Dodge, J. R.,	*Hudson*
1889	Eaton, E.,	"
1892	Ellis, E. J. C.,	*Clayton*
1876	‡Howell, George,	*Tecumseh*
1886	Hyde, C. C.,	*Addison*
1887	Jenkins, J. F.,	*Tecumseh*
1884	Logue, Mina,	*Adrian*
1883	Morden, W. S.,	*Macon*
1878	North, L. G.,	*Tecumseh*
1889	White, Jno. E.,	*Clinton*

LIVINGSTON COUNTY.

1888	Austin, A. S.,	*Fowlerville*
1889	Huntington, W. C.,	*Howell*
1878	McHench, W. J.,	*Brighton*
1878	Sigler, F. H.,	*Pinckney*

MACKINAW COUNTY.

1892 Clark, W. E., *St. Igance*

MACOMB COUNTY.

1888	Beardslee, S. T.,	*Armada*
1889	Berry, W. F.,	*Mt. Clemens*
1888	Chapin, A. B.,	"
1888	Greenshields, Wm.,	*Romeo*
1888	‡Knight, P. A.,	*Utica*
1885	Moore, M. T.,	*Richmond*
1888	‡Shotwell, A. N.,	*Mt. Clemens*
1889	Taylor, H. F.,	"
1882	Yates, A.,	*Washington*
1885	Yates, J.,	*Roseville*

MARQUETTE COUNTY.

1895 ‡Felch, Theodore A., *Ishpeming*.

‡ Present. * Ex-President.

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MASON COUNTY.

1889 Crosby, G. W., *Ludington.*

MECOSTA COUNTY

Year Joined.		Residence.	Year Joined.		Residence.
1890	Burkart, J. L.,	*Big Rapids*	1891	‡Snyder, John,	*Mecosta*
1891	‡Dodge, Wm. T.,	"	1894	Terrell, F. C.,	*Big Rapids*
1890	‡Griswold, L. S.,	"			

MIDLAND COUNTY.

1883 ‡Towsley, F. A., *Midland.*

MISSAUKEE COUNTY

1894 Decker, Jno W., *Lake City.*

MONROE COUNTY.

1883	Heath, G. F.,	*Monroe*	1887	‡Southworth, C. T.,	*Monroe*
1890	Root, P. S.,	"			

MONTCALM COUNTY.

1894	‡Blanchard, F. R.,	*Lakeview*	1893	Morgan, Chas. F.,	*Greenville*
1890	Crotser, L. S.,	*Edmore*	1879	Nichols, A. W.,	"
1890	Forsyth, A. H.,	*Lakeview*	1894	‡Sanderson, J. H.,	*Edmore*
1893	Gamber, W. P.,	*Stanton*			

MUSKEGON COUNTY.

1893	Block, S.,	*Muskegon*	1890	Garber, F. W.,	*Muskegon*
1893	Clement, A. B.,	"	1893	Smart, W. N.,	"
1884	Denslow, J. F.,	"	1883	Van der Laan, J.,	"
1883	Dobson, Jennie M.,	"	1886	Williams, G. S.,	"
1893	Fries, C. S.,	"	1886	Williams, O. C ,	"

OAKLAND COUNTY.

1895	Breakey, James F.,	*Pontiac*	1884	Lathrop, H. K.,	*Royal Oak*
1885	‡Chapman, E. A.,	*Walled Lake*	1873	Le Baron, R ,	*Pontiac*
1892	Chapman, Harvey S ,	*Pontiac*	1890	‡Manly, Ora,	*Davisburg*
1885	Christian, E. A ,	"	1892	‡Morse, Jason,	*Pontiac*
1890	Eves, Wm ,	*Waterford*	1885	Raynale, C. M.,	*Birmingham*
1891	Galbraith, F. B.,	*Pontiac*	1891	Riker, Jno. D.,	*Pontiac*
1891	Gray, M. W.,	"	1895	‡Sutherland, C. J.,	*Clarkston*
1892	Guillot, H. C.,	"	1875	Wade, D. W. C.,	*Holly*
1889	Hunter, G. F.,	*Holly*	1881	Wilson, J. E.,	*Rochester*

OGEMAW COUNTY.

1890 ‡Flynn, E. H., *West Branch.*

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OSCEOLA COUNTY.

1895 ‡Swanton, L., *Reed City*.

OTTAWA COUNTY.

Year Joined.		Residence.	Year Joined.		Residence.
1884	Baert, Daniel,	*Zeeland*	1886	‡Kremers, H.,	*Holland*
1890	Godfrey, B. B.,	*Holland*	1890	Mabbs, J. A.,	"
1884	Huizinga, T. G.,	*Zeeland*	1877	Walkley, W. S.,	*Gr'd Haven*

ST. CLAIR COUNTY.

1894	‡Burtless, W. E.,	*St. Clair*	1885	Stockwell, C. B.,	*Port Huron*
1885	Clancy, C. C.,	*Port Huron*	1882	*Stockwell, C. M.,	"
1885	Merritt, S. W.,	*Fort Gratiot*	1885	Todd, G. W.,	*Jeddo*
1884	Mills, H. R.,	*Port Huron*	1885	Wilson, M.,	*Port Huron*
1884	Platt, J. S.,	"			

ST. JOSEPH COUNTY.

1884	Chivers, W. H.,	*Colon*	1889	Williams, J. R.,	*White Pigeon*
1894	Robinson, F. W.,	*Sturgis*			

SAGINAW COUNTY

1891	‡Alden, Chas. W.,	*Saginaw*	1885	Goodman, Celia W. T.	*Saginaw*
1895	‡Bailey, O. L.,	*Chesaning*	1895	‡Hudson, J. H.,	*Merrill*
1890	Barber, O. P.,	*Saginaw*	1884	‡Kitchen, Samuel,	*Saginaw*
1879	*Bliss, L. W.,	"	1891	‡McCormick, J. C.,	"
1891	Bradt, Chas. M.,	*St. Charles*	1894	‡McLaren, J. L.,	"
1892	‡Brooks, Harriet V. B,	*Saginaw*	1891	McMeekin, Jas. W.,	"
			1891	Massbacher, Chas. F.,	"
1891	‡Connery, Wm. S.,	"	1890	‡Ostrom, S. C. J.,	"
1891	‡Cornell, Daniel B.,	"	1891	Rouse, J. S.,	"
1886	‡Davis, E. W.,	"	1892	‡Rowe, B. B.,	"
1891	‡Edelmann, F. W.,	"	1891	‡Sample, C. H.,	"
1886	‡Eldred, J. N.,	*Chesaning*	1891	‡Schemm, Geo. C.,	"
1891	‡Ellis, Chas. W.,	*Saginaw*	1888	‡Small, S. I.,	"
1884	Florentine, F. B.,	"	1881	‡Williams, H.,	"
1884	Freeman, F. W.,	"			

SANILAC COUNTY.

1891	McCrea, Henry,	*Marlette*	1891	‡Watson, Jas. A.,	*Brown City*

SHIAWASSEE COUNTY.

1892	Arnold, A. L.,	*Owosso*	1895	McCormick, C.,	*Owosso*
1879	Chrouch, G. W.,	*Shaftsburg*	1878	‡Perkins, J.,	"
1892	‡Cowles, A. G.,	*Durand*	1887	Phippen, S. S. C.,	"
1886	‡Hume, A. M.,	*Owosso*	1895	Scully, M. C.,	*Vernon*
1886	Hume, W. C.,	*Corunna*	1892	‡Shoemaker, J. S.,	*New Lothrop*
1894	Lamb, D. H.,	*Owosso*	1869	Ward, E. B.,	*Laingsburg*

‡ Present. * Ex-President.

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TUSCOLA COUNTY.

Year Joined.		Residence.	Year Joined.		Residence.
1895	Clark, C. W.,	*Caro*	1895	‡Livingstone, P. J.,	*Caro*
1892	D'Arcy, Benj.,	*Mayville*	1892	Rogers, A. S.,	*Vassar*
1895	‡Garvin, Wynne C.,	*Millington*	1885	Seeley, A. L.,	*Mayville*
1890	Morris, R.,	*Vassar*	1801	Wright, W. C.,	*Unionville*

VAN BUREN COUNTY.

1884	Baker, C. T.,	*Decatur*	1889	Palmer, E. A.,	*Hartford*
1888	Carnes, G. D.,	*South Haven*	1883	Rose, G. L.,	*Decatur*
1890	Engle, W. A.,	*Hartford*	1889	Vaughan, O. M.,	*Covert*
1889	Lawrence, Robt. R.,	"	1883	Wiggins, O. B.,	*Lawrence*

WASHTENAW COUNTY.

1894	Belser, M. L.,	*Ann Arbor*	1893	Lombard, W. P.,	*Ann Arbor*
1876	‡Breakey, W. F.,	"	1892	‡Lynds, James G.,	"
1884	Campbell, W. A.,	"	1895	‡McClintock, Chas. T.,	"
1885	‡Carrow, Flemming	"	1888	‡Martin, J. N.,	"
1894	Cushny, Arthur	"	1894	Murdock, Thos. S.,	*Ypsilanti*
1881	Darling, C. G.,	"	1890	‡Nancrede, C. B.,	*Ann Arbor*
1892	‡Dock, George	"	1894	‡Novy, F. G.,	"
1888	Dorrance, W. H.,	"	1873	‡Owen, F. K.,	*Ypsilanti*
1875	‡Georg, Conrad,	"	1883	Palmer, G. W.,	*Chelsea*
1883	Gibbes, Heneage,	"	1883	Prescott, A. B.,	*Ann Arbor*
1891	Hagler, E. E.,	"	1893	Root, Don A.,	"
1876	‡Herdman, W. J.,	"	1894	Solis, Jeanne C.,	"
1888	Huber, G. C.,	"	1892	Troy, E. H.,	"
1894	‡Hull, G. M.,	*Ypsilanti*	1879	‡Vaughan, V. C.,	"
1890	‡Keating, J. W.,	*Ann Arbor*	1886	Wessinger, J. A.,	"
1883	Lee, John,	*Dexter*			

WAYNE COUNTY.

1892	Anderson, Willis S.,	*Detroit*	1866	Brumme, Carl,	*Detroit*
1891	Armstrong, O. S.,	"	1891	Bryan, Alonzo,	"
1873	Banks, Gertrude S.,	"	1887	Campbell, D. M.,	"
1892	Bennett, J. E.,	*Plymouth*	1886	Campbell, D. S.,	"
1882	Bennett, E. O.,	*Wayne*	1888	‡Carrier, A. E.,	"
1894	‡Biddle, A. P.,	*Detroit*	1873	‡Carstens, J. H.,	"
1888	Bigg, A. H.,	"	1888	Chapoton, E. A.,	"
1888	Bonning, Carl,	"	1885	‡Chittick, W. R.,	"
1868	Book, J. B.,	"	1867	‡*Christian, E. P.,	*Wyandotte*
1888	Brady, M.,	"	1888	Clark, G. E.,	*Detroit*
1892	Brand, W. J.,	"	1885	‡Clark, J. E.,	"
1885	Brodie, Benj. P.,	"	1875	Cleland, H. A.,	"
1894	Brown, J. Morris,	"	1888	Cleland, James, Jr.,	"

‡ Present. * Ex-President.

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WAYNE COUNTY—CONTINUED.

Year Joined.		Residence.
1882	Collier, J. M.,	*Plymouth*
1890	Collins, A. N.,	*Detroit*
1872	‡Connor, Leartus,	"
1894	Cook, Emma D.,	"
1888	Cree, W. J.,	"
1892	Dakin, D. L.,	"
1887	‡Deuel, Elizabeth L.,	"
1882	Devendorf, C. A.,	"
1884	Donovan, D. V.,	"
1887	Douglas, Chas.,	"
1885	Duffield, George,	"
1867	Duffield, S. P.,	*Dearborn*
1885	Eaton, O. P.,	*Detroit*
1885	Edwards, W. F.,	"
1882	Emerson, J. E.,	"
1895	‡Fletcher, E. A.,	"
1884	Frank, C. P.,	
1885	‡*Frothingham, G. E.,	"
1893	Frothingham, G. E., Jr.,	"
1884	Gailey, J. K.,	"
1891	‡Gerry, Harriet A.,	"
1892	Gillman, Robert W.,	"
1894	Hartz, H. J.,	"
1887	Henry, W. G.,	"
1888	‡Hitchcock, C. W.,	"
1895	‡Houghton, E. M.,	"
1884	Hoyt, B. R.,	"
1889	‡Huson, Florence,	"
1888	Imrie, A. W.,	"
1885	‡Inglis, David,	"
1894	Ives, A. W.,	"
1867	‡Jenks, E. W.,	"
1882	‡Jennings, C. G.,	"
1888	Johnson, L. H.,	"
1885	Jones, J. R.,	*Leesville*
1888	Judson, H. C.,	*Detroit*
1879	Kiefer, H.,	"
1884	Kirker, G. A.,	"
1866	Klein, Peter,	"
1888	La Ferte, Daniel,	*Detroit*
1888	Lau, O. H.,	"
1890	Lee, John,	"
1894	Lennox, L. J.,	"
1881	‡Leonard, C. Henri,	"
1888	‡Longyear, H. W.,	"
1867	‡*McGraw, T. A.,	*Detroit*
1892	McLean, Angus,	"
1875	‡*Maclean, Donald	"
1888	Maire, L. E.,	"
1887	Mann, F. W.,	"
1884	‡Manton, W. P.,	"
1890	Metcalf, W. F.,	"
1887	Miner, S. G.,	"
1875	‡Mulheron, J. J.,	"
1893	‡Odell, R. W.,	"
1894	Parker, Dayton,	"
1885	Parker, D. L.,	"
1895	‡Parker, Walter R.,	"
1892	Renaud, Geo. L.,	"
1888	‡Robbins, F. W.,	"
1895	‡Schell, Luke E.,	"
1886	Sherrill, E. S.,	"
1875	‡Shurly, E. L.,	"
1888	Skinner, E. C.,	"
1892	‡Smith, Edgar B.,	"
1872	‡Smith, Eugene,	"
1867	Smith, H. E.	"
1878	Sprague, W. B.,	"
1888	‡Stevens, W. C.,	"
1888	Summers, F. D.,	"
1888	‡Tappey, E. T.,	"
1894	‡Tibbals, F. B.,	"
1894	Walker, F. B.,	"
1867	‡*Walker, H. O.,	"
1869	Webber, N. W.,	"
1895	Winter, J. A.,	"
1879	Wyman, H. C.,	"

WEXFORD COUNTY.

1890	‡McMullen, B. H.,	*Cadillac*
1895	‡Miller, Carroll E.,	*Cadillac*

‡ Present. * Ex-President.

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Alphabetical List of Active Members.

1895.

Names and Residences.	
Abbot, Frank E	Sterling
Albright, Joseph	Grand Rapids
Alden, Charles W	Saginaw
Allen, G. B	Charlotte
Alton, Robert W	Ionia
Alvord, A. W	Battle Creek
Anderson, Willis S	Detroit
Andrus, Nancy L	Grand Rapids
Armstrong, Oscar S	Detroit
Arnold, Alfred L	Owosso
Avery, Eunice J	Coldwater
Austin, A. S	Fowlerville
Babcock, Edgar B	Kalkaska
Baert, Daniel	Zeeland
Bailey, O. L	Chesaning
Baker, C. H	Bay City
Baker, C. T	Decatur
Baker, Henry B	Lansing
Ballard, L. Anna	Lansing
Banks, Gertrude S	Detroit
Barber, Oliver P	Saginaw
Barnes, Wm. L	Ionia
Bates, Noah	Flint
Beagle, Luke N	Flint
Beardslee, S. T	Armada
Beers, John S	Derby
Belser, M. L	Ann Arbor
Bennett, J. E	Plymouth
Bennett, E. O	Wayne
Berry, W. F	Mt. Clemens
Best, Leonidas E	Grand Rapids
Best, McKendra	Grand Rapids
Biddle, Andrew P	Detroit
Bigelow, Charles P	Grand Rapids
Bigg, A. H	Detroit
Bigham, E	Grand Rapids
Blanchard, Francis R	Lakeview
Bliss, L. W	Saginaw
Block, S	Muskegon
Boise, Eugene	Grand Rapids
Bonning, Carl	Detroit
Book, J. B	Detroit
Boot, Tennis A	Grand Rapids
Bosman, J. Will	Kalamazeo
Bradley, J. B	Eaton Rapids
Bradt, Charles M	St. Charles
Brady, John	Grand Rapids
Brady, M	Detroit
Brand, W. J	Detroit
Baird, Thomas A	Bay City
Brainerd, Ira N	Alma
Breakey, James F	Pontiac
Breakey, Wm. F	Ann Arbor
Briggs, Thomas H	Battle Creek
Bristol, Miles C	Bay City
Brodie, Benjamin P	Detroit
Brooks, Harriet V. B	Saginaw

Names and Residences.	
Brown, J. Morris	Detroit
Brumme, Carl	Detroit
Bryan, Alonzo	Detroit
Bryant, Ruth O	Battle Creek
Buckham, James N	Flint
Bulson, Albert E	Jackson
Burkart, John L	Big Rapids
Burleigh, Geo. W	Battle Creek
Burr, C. B	Flint
Burtless, W. R	St. Clair
Burwell, A. G	Byron Center
Calkins, Henry T	Petoskey
Callow, F. H	Mt. Morris
Campbell, D. M	Detroit
Campbell, D. S	Detroit
Campbell, J. F	Lansing
Campbell, O. B	Ovid
Campbell, Wm. A	Ann Arbor
Carnes, George D	South Haven
Carr, Henrietta A	Eaton Rapids
Carrier, A. E	Detroit
Carrow, Flemming	Ann Arbor
Carstens, J. H	Detroit
Catlin, H. W	Grand Rapids
Caughlin, J. W	Bay City
Chadwick, H. J	Grand Rapids
Chamberlain, G. V	Flint
Chapin, A B	Mt. Clemens
Chapman, E. A	Walled Lake
Chapman, Harvey S	Pontiac
Chapoton, E. A	Detroit
Chittick, W. R	Detroit
Chivers, W. H	Colon
Christian, E. A	Pontiac
Christian, E. P	Wyandotte
Chrouch, George W	Shaftsburg
Clancy, C. C	Port Huron
Clark, C. W	Caro
Clark, George E	Detroit
Clark, J. E	Detroit
Clark, Waldo E	St. Ignace
Cleland, H. A	Detroit
Cleland, James, Jr	Detroit
Clement, A. B	Muskegon
Cogshall, Bela	Flint
Collier, J. M	Plymouth
Collins, Alva N	Detroit
Conley, W. C	Saranac
Connery, Wm. S	Saginaw
Connor, Leartus	Detroit
Cook, Emma D	Detroit
Cope, C. S	Ionia
Cornell, Daniel B	Saginaw
Cowles, Ambrose G	Durand
Cree, W. J	Detroit
Crosby, G W	Ludington
Crotser, L. S	Edmore

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NAMES AND RESIDENCES.

Culver, Sidney H.....Mason
Cushny, Arthur.....Ann Arbor
Dakin, D. L.....Detroit
Dales, Oscar L.....Grand Rapids
D'Arcy, Benj.....Mayville
Darling, C. G.....Ann Arbor
Davis, Eugene W.....Saginaw
DeCamp, W. H.....Grand Rapids
Decker, John W.....Lake City
Dellenbaugh, C. C.....Portland
Denslow, J. F.....Muskegon
Deuel, Elizabeth L.....Detroit
Devendorf, C. A.....Detroit
DeVore, Jas. A.....Grand Rapids
Dobson, Jennie M.....Muskegon
Dock, George.....Ann Arbor
Dodge, I. R.....Hudson
Dodge, Wm. T.....Big Rapids
Donovan, D. V.....Detroit
Dorrance, W. H.....Ann Arbor
Donglas, Charles.....Detroit
Dowse, C. Louise.....Petoskey
Drake, A. P.....Hastings
Droste, Casper M.....Grand Rapids
Duffield, George.....Detroit
Duffield, S. P.....Dearborn
Dunlap, Harley M.....Battle Creek
Earle, Bessie.....Grand Rapids
Eaton, Edwin.....Hudson
Eaton, O. P.....Detroit
Edelmann, F. W.....Saginaw
Edie, J. Orton.....Grand Rapids
Edwards, W. F.....Detroit
Edwards, W. M.....Kalamazoo
Eldred, J. N.....Chesaning
Ellis, Chas. W.....Saginaw
Ellis, E. J. C.....Clayton
Emerson, Justin E.....Detroit
Engle, W. A.....Hartford
Erwin, Robert W.....Bay City
Eves, Wm.....Waterford
Failing, J. F.....Grand Rapids
Fairbank, H. C.....Flint
Felch, Theodore A.....Ishpeming
Ferguson, James E.....Belding
Flagler, W. S.....Imlay City
Fletcher, E. A.....Detroit
Fletcher, F. E.....Lake Linden
Florentine, F. B.....Saginaw
Flynn, E. H.....West Branch
Foote, John R.....Bay City
Forsyth, Arthur H.....Lakeview
Fox, Paul S.....Athens
Frank, C. P.....Detroit
Freeman, F. W.....Saginaw
French, S. S.....Battle Creek
Fries, C. S.....Muskegon
Frothingham, George E.....Detroit
Frothingham, George E., Jr.....Detroit
Fuller, D. E.....Hastings
Fuller, Wm.....Grand Rapids
Gailey, J. K.....Detroit
Galbraith, F. B.....Pontiac
Gallagher, M.....Bay City
Gamber, W. P.....Stanton
Garber, Frank W.....Muskegon
Gardner, Elmer D.....Davison
Garvin, Wynne C.....Millington
Georg, Conrad.....Ann Arbor
Gerry, Harriet A.....Detroit
Gibbes, Heneage.....Ann Arbor
Gier, Frank M.....Hillsdale
Gillette, Leon M.....Battle Creek
Gillman, Robert W.....Detroit
Godfrey, Byron B.....Holland
Goodman, C. W. Taylor.....Saginaw

NAMES AND RESIDENCES.

Gordon, George G.....Flushing
Graham, H. W.....Mt. Morris
Granger, George H.....Bay City
Graves, S. C.....Grand Rapids
Gray, Mason W.....Pontiac
Green, George W.....Battle Creek
Green, Mary E.....Charlotte
Greene, D. M.....Grand Rapids
Greene, George H.....Marshall
Greene, J. N.....Leslie
Green, M. C.....Lowell
Greenshields, Wm.....Romeo
Griggs, Arthur.....Standish
Griswold, J. B.....Grand Rapids
Griswold, Leavitt S.....Big Rapids
Groner, F. J.....Grand Rapids
Guillot, H. C.....Pontiac
Hagadorn, A. D.....Lansing
Hagadorn, A. F.....West Bay City
Hagler, Elmer E.....Ann Arbor
Hake, Wm. F.....Grand Rapids
Handy, John W.....Flint
Hartz, Henry J.....Detroit
Hauxhurst, John W.....West Bay City
Hayden, Charles N.....Lansing
Hazlewood, A.....Grand Rapids
Heath, George F.....Monroe
Henry, W. G.....Detroit
Herdman, W. J.....Ann Arbor
Hitchcock, C. W.....Detroit
Houghton, E. M.....Detroit
Howell, George.....Tecumseh
Hoyt, B. R.....Detroit
Hoyt, Everett A.....Bay City
Hubbard, C. D.....Parmo
Huber, G. C.....Ann Arbor
Hudson, J. H.....Merrill
Huizinga, Thomas G.....Zeeland
Hull, G. M.....Ypsilanti
Hull, Tyler.....Dimondale
Hume, A. M.....Owosso
Hume, Wm. C.....Corunna
Hunter, G. F.....Holly
Huntington, W. C.....Howell
Huson, Florence.....Detroit
Hyde, C. C.....Addison
Imrie, Andrew W.....Detroit
Inglis, David.....Detroit
Ingram, Aaron R.....Argentine
Ives, A. W.....Detroit
Jenkins, J. F.....Tecumseh
Jenks, E. W.....Detroit
Jennings, C. G.....Detroit
Johnson, Cornelius A.....Mancelona
Johnson, G. K.....Grand Rapids
Johnson, L. H.....Detroit
Johnston, Collins H.....Grand Rapids
Jones, Geo. W.....Imlay City
Jones, John R.....Leesville
Judson, H. C.....Detroit
Keating, John W.....Ann Arbor
Kellogg, J. H.....Battle Creek
Kelly, C. M.....Grand Rapids
Kerr, William.....Bay City
Kiefer, Herman.....Detroit
King, Herbert M.....Grand Rapids
Kinne, Hudson J.....Frankfort
Kirker, Geo. A.....Detroit
Kirkland, R. J.....Grand Rapids
Kitchen, Samuel.....East Saginaw
Klein, Peter.....Detroit
Klingmann, Theo. C.....Bay City
Knight, P. A.....Utica
Kremers, Henry.....Holland
LaCrone, Oliver A.....Kalamazoo
La Ferte, Daniel.....Detroit

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NAMES AND RESIDENCES.

Laing, John B.....Otisville
Lamb, D. H.....Owosso
Landon, H. B.....Bay City
Lang, A. B.....Sault Ste. Marie
Langford, Geo. W.....Williamston
Lathrop, Henry K.....Royal Oak
Lau, O. H.....Detroit
Lawrence, Robert R.....Hartford
Le Baron, R.....Pontiac
Lee, John.....Dexter
Lee, John.....Detroit
Lennox, L. J.....Detroit
Leonard, C. Henri.....Detroit
Lewis, C. H.....Jackson
Lindsay, Kate.....Battle Creek
Livingstone, P. J.....Caro
Locy, Lorenzo J.....Davison
Logue, Mina.....Adrian
Lombard, Warren P.....Ann Arbor
Longyear, H. W.....Detroit
Lowry, G. W.....Hastings
Ludlum, Stephen S.....Harrisville
Lynds, Jas. G.....Ann Arbor
McClintock, Chas. T.....Ann Arbor
McColl, Hugh.....Lapeer
McColl, John A.....Grand Rapids
McCollum, Emma.....Battle Creek
McCormick, C.....Owosso
McCormick, Julius C.....Saginaw
McCrea, Henry.....Marlette
McDonnell, M. C.....Bad Axe
McGraw, T. A.....Detroit
McHench, W. J.....Brighton
McKain, C. H.....Vicksburg
McLaren, J. L.....Saginaw
McLean, Angus.....Detroit
McLeay, D.....Prairieville
McLurg, John.....Bay City
McMeekin, James W.....Saginaw
McMullen, Bartlette H.....Cadillac
McNair, Rush.....Kalamazoo
McPherson, James A.....Grand Rapids
McTavish, Duncan A.....West Bay City
Mabbs, James A.....Holland
Maclean, Donald.....Detroit
Main, F. W.....Jackson
Main, J. T.....Jackson
Maire, L. E.....Detroit
Manly, A. C.....Leslie
Manly, Ora.....Davisburg
Mann, F. W.....Detroit
Manton, W. P.....Detroit
Marsh, Wm. C.....Quincy
Marshall, Jos.....Gaines
Martin, F. W.....Westphalia
Martin, J. N.....Ann Arbor
Massbacher, Charles F.....Saginaw
Matthews, James D.....Gaines
Merritt, S. W.....Fort Gratiot
Metcalf, Wm. F.....Detroit
Miller, Carroll E.....Cadillac
Miller, Eugene.....Battle Creek
Mills, H. R.....Port Huron
Minar, E. G.....Bay City
Miner, S. G.....Detroit
Moore, Edward E.....Hillsdale
Moore, M. T.....Richmond
Morden, W. S.....Macon
Morgan, Charles F.....Greenville
Morris, Richard.....Vassar
Morse, Jason.....Pontiac
Mulheron, J. J.....Detroit
Munson, J. D.....Traverse City
Murdock, Thomas S.....Ypsilanti
Nancrede, Charles B.....Ann Arbor
Neff, I. H.....Kalamazoo

NAMES AND RESIDENCES.

Newark, W. E.....Charlotte
Newkirk, C. T.....Bay City
Nichols, A. W.....Greenville
Nichols, G. B.....Martin
North, L. G.....Tecumseh
Novy, Frederick G.....Ann Arbor
Odell, R. W.....Detroit
Osborne, H. B.....Kalamazoo
Ostrander, Herman.....Kalamazoo
Ostrom, Sylvester C. J.....Saginaw
Oven, A. G.....Petoskey
Owen, Frank K.....Ypsilanti
Palmer, E. A.....Hartford
Palmer, E. C.....Charlotte
Palmer, George W.....Chelsea
Palmer, Henry.....St. Johns
Park, John B.....Okemos
Parker, Dayton.....Detroit
Parker, D. L.....Detroit
Parker, Walter R.....Detroit
Parmeter, Edward L.....Albion
Patterson, A. J.....Grand Rapids
Patterson, P. D.....Charlotte
Perkins, Jabez.....Owosso
Peterson, Reuben.....Grand Rapids
Pettyjohn, Elmore S.....Alma
Phillips, H. H.....Vandalia
Phippen, S. S. C.....Owosso
Pierce, Della P.....Kalamazoo
Pinkham, J. F.....Belding
Platt, Joseph S.....Port Huron
Pollard, John W.....St. Johns
Porter, J. A.....Brooklyn
Post, Julius A.....Lansing
Pratt, Foster.....Kalamazoo
Prescott, A. B.....Ann Arbor
Pressey, Austin J.....Grand Rapids
Price, Adam.....Almont
Pyle, Benjamin.....Grand Rapids
Randall, I. E.....West Bay City
Ranney, George E.....Lansing
Raynale, Charles M.....Birmingham
Renaud, George L.....Detroit
Richmond, P. E.....Mt. Pleasant
Riley, W. H.....Battle Creek
Riker, John D.....Pontiac
Robbins, F. W.....Detroit
Robinson, Fred W.....Sturgis
Rockwell, A. H.....Kalamazoo
Rogers, A. S.....Vassar
Roller, L. A.....Grand Rapids
Root, Don A.....Ann Arbor
Root, Philander S.....Monroe
Rose, Gilbert L.....Decatur
Rouse, Jonathan S.....Saginaw
Rowe, B. B.....Saginaw
Rowe, W. E.....Allegan
Ruggles, F. E.....Bay City
Rutherford, Frances A.....Grand Rapids
Sample, Chester H.....Saginaw
Sanderson, J. H.....Edmore
Sands, Theodore E.....Battle Creek
Sawyer, Walter H.....Hillsdale
Schaberg, H. H.....Kalamazoo
Schell, Luke E.....Detroit
Scherer, Ernest.....Fowler
Schemm, Geo. C.....Saginaw
Schurtz, Perry.....Grand Rapids
Seeley, A. L.....Mayville
Scully, M. C.....Vernon
Shellito, Frederick.....Marcellus
Sherrill, E. S.....Detroit
Shoemaker, Jacob S.....New Lothrop
Shotwell, A. N.....Mt. Clemens
Shumway, F. W.....Williamston
Shurly, E. L.....Detroit

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NAMES AND RESIDENCES.

Sigler, F. H.....Pinckney
Simonson, A. B.....Calumet
Skinner, E. C.....Detroit
Small, S. I.....Saginaw
Smart, W. N.....Muskegon
Smith, Edgar B.....Detroit
Smith, Eugene.....Detroit
Smith, Hamilton E.....Detroit
Smith, Mary C.....Grand Rapids
Snook, Jerome M.....Kalamazoo
Snyder, John.....Mecosta
Solis, Jeanne C.....Ann Arbor
Southworth, C. T.....Monroe
Spencer, Ralph H.....Grand Rapids
Sprague, W B.....Detroit
Stealy, A. R.....Charlotte
Stevens, W. C.....Detroit
Stewart, Peter.....Hadley
Stimson, Charles A.....Eaton Rapids
Stockwell, C. B.....Port Huron
Stockwell, C. M.....Port Huron
Stone, D. F.....Bay City
Stone, Geo. W.....Metamora
Strahan, David H.....Pewamo
Strangways, W F.....Flint
Strong, E. B.....Byron Center
Strong, H. W.....Byron Center
Stuch, L. F.....Allegan
Summers, F. D.....Detroit
Sutherland, C. J.....Clarkston
Sutherland, E. D.....Bay City
Suylandt, Charles G.....Gladwin
Swaney, H. N.....Grand Ledge
Swanton, L.....Reed City
Tappey, E. T.....Detroit
Taylor, H. F.....Mt. Clemens
Taylor, James E.....Ovid
Taylor, Joseph H.....Lapeer
Taylor, Philander B.....Clio
Terrell, Franklin C.....Big Rapids
Thomason, H. D.....Albion
Tibbals, F. B.....Detroit
Tibbits, M. A.....Linden
Todd, George W.....Jeddo
Tompkins, L. D.....Cassopolis
Towsley, F. A.....Midland
Troy, Edward H.....Ann Arbor
Tupper, Horace.....Bay City
Turner, F. N.....Webberville
Van der Laan, J.....Muskegon
Van Deusen, E. H.....Kalamazoo

NAMES AND RESIDENCES.

Van Zwaluwenburg, C.....Kalamazoo
Vaughan, O. M.....Covert
Vaughan, V. C.....Ann Arbor
Voorhees, G. V.....Lansing
Wade, D. W. C.....Holly
Walkley, W. S.....Grand Haven
Walker, Frank B.....Detroit
Walker, H. O.....Detroit
Walter, Hiram.....Eaton Rapids
Wanty, Emma N.....Grand Rapids
Ward, E. B.....Laingsburg
Ward, W. E.....Fenton
Warren, Wadsworth.....Flint
Watson, James A.....Brown City
Weaver, F. A.....Charlotte
Weaver, J. B.....Lansing
Weaver, Leroy F.....Nashville
Webber, N. W.....Detroit
Weller, Martin.....St. Johns
Welsh, D. E.....Grand Rapids
Wessinger, J. A.....Ann Arbor
Weston, A. H.....Grandville
Wheeler, Charles S.....Flushing
Whinery, J. B.....Grand Rapids
White, C. H.....Grand Rapids
White, John E.....Clinton
White, M P.....Dowagiac
White, Wm. H.....Grand Rapids
Wiggins, O. B.....Lawrence
Wilbur, C. L.....Lansing
Williams, G. S.....Muskegon
Williams, H.....Saginaw
Williams, John R.....White Pigeon
Williams, Mary A. W.....Eaton Rapids
Williams, N. H.....Jackson
Williams, O. C.....Muskegon
Willson, J. C.....Flint
Wilson, J. E.....Rochester
Wilson, M.....Port Huron
Wilson, W. E.....Grand Ledge
Winter, J. A.....Detroit
Wisse, Isman.....Grand Rapids
Wood, D. H.....Coldwater
Wooster, S. R.....Grand Rapids
Wright, W. C.....Unionville
Wyman, H. C.....Detroit
Yates, Albert.....Washington
Yates, James.....Roseville
Yerex, D. V.....Imlay City
Young, W. H.....Nashville

Total number of active members, 519

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CHANGES IN MEMBERSHIP.

DURING THE YEAR TO SEPTEMBER 1, 1895.

DROPPED

FOR NON-PAYMENT OF DUES.

Bailey, E. H., Corunna.
Balfrey, O. M., Saginaw.
Belknap, S., Niles.
Bell, Samuel, Detroit.
Dean, O. A., South Haven.
Duncan, T., Saginaw.
Freeman, J. W., Saginaw.
Hare, W. J., Detroit.
Jones, W. S., Corunna.
Ketcham, W. J., Dowagiac.
Lambert, W. C., Wyandotte.
Langlois, T. J., Wyandotte.
Laraway, G. L., Emery.
Leach, H. M., Saginaw.
McDannell, O. E., Lowell.
McEntee, James, Mt. Pleasant.
Moon, O. H., Howell.
Morse, C. W., Dowagiac.
North, J. D., Jackson.
Northrop, M., Port Huron.
O'Reilly, W. J., Saginaw.
Pierce, L. D. H., Centerville.
Pendell, E. J., Newaygo.
Riker, A. W., Fenton.
Seeley, O. F., Climax.
Smith, W. B., Ann Arbor.
Spencer, C. E., Fort Gratiot.
Thomas, H. F., Allegan.
Towsley, M. L., Kalamazoo.
Upjohn, J. T., Kalamazoo.
Upjohn, W. E., Kalamazoo.
Van Liew, V. C., Lennon.
Wever, George, Marlette.
Wilson, John, Detroit.

DROPPED

BECAUSE REMOVED FROM THE STATE.

Elliott, John L., Bay City to Duluth, Minn.
Mahoney, George W., Decatur to Chicago.
Smith, E. H., Niles to Santa Clara, Cal.
Stevens, R. H., Grand Rapids to Bakersfield, Cal.

RESIGNED

Burrows, Lorenzo, Jr., Saginaw.
Gish, John L., Jackson.
Stewart, Alexander, Highland Park.

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DIED.

Cook, James M., Muskegon.
Dunning, E. B., Paw Paw.
Kaiser, Augustus, Detroit.
Kimball, A. H. Battle Creek.
Lyster, Henry F., Detroit.
McGurk, J. R., Capac.
Palmer. Geo. C., Flint.
Pease, Geo. C., Fulton.
Topping, George W., Detroit.
Twiss, E., Union City.
Whalen, M. E., Paw Paw.
White, John B., Saginaw.
Wilkins, S. M., Eaton Rapids.
Wood, William, Grand Rapids.
Woodman, Eli, Farmington.

Total number dropped,	56	
New members,	49	
Lost in membership,	8	
Total active membership, Sept. 1, 1895,		519

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In Memoriam.

	Year Elected.	Time of Death.
JAS. B. ABBOTT, Clayton	1889	1890
J. ANDREWS, Paw Paw	1873	1886
S. M. AXFORD, Flint	1866	1874
GEO. BARNES, Kalamazoo	1871	1873
SARAH A. BEARDSLEY, Jonesville	1884	1886
J. H. BEECH, Coldwater	1876	1878
JOHN H. BENNETT, Coldwater	1873	1891
D. W. BERDAN, Cheboygan	1889	1894
Z. E. BLISS, Grand Rapids	1874	1877
E. J. BONINE, Niles	1866	1892
JUDSON BRADLEY, Detroit	1879	1889
*WM. BRODIE, Detroit	1866	1890
FRANK W. BROWN Detroit	1884	1893
I. E. BROWN, Detroit	1874	1890
I. A. BROWN, Detroit	1868	1882
WM. BROWNELL, Utica	1866	1884
T. R. BUCKHAM, Flint	1888	1891
A. R. CALKINS, Allegan	1871	1873
A. B. CAMPBELL, Mason	1884	1891
J. V. CHAMBERLAIN, Ypsilanti	1881	1886
C. L. CHANDLER, Richmond	1889	1893
H. F. CHEEVER, Ann Arbor	1869	1877
E. M. CLARK, Detroit	1869	1871
JAMES M. COOK, Muskegon	1890	1894
M. A. COOK, Riley Center	1888	1892
ALANSON CORNELL, Ionia	1866	1873
*EDWARD COX, Battle Creek	1871	1882
JOHN DAY, Eng., Geelong, Australia	1877	1881
W. DECKER, Mt. Clemens	1878	1881
THOMAS DOLAN, Lansing	1881	1881
E. B. DUNNING, Paw Paw	1890	18. 4
E. S. DUNSTER, Ann Arbor	1875	1888
D. O. FARRAND, Detroit	1866	1883
LOUIS M. FASQUELLE, St. John	1884	1889
IRA W. FISKE, Kalamazoo	1872	1891
RUTH A. GARRY, Ypsilanti	1872	1877
V. L. GARRETT, Alaska	1881	1890
JOHN GEORG, Detroit	1885	1888
CALEB B. GILBERT, Detroit	1867	1892
H. M. GREEN, Grand Rapids	1872	1872
STEPHEN A. HAGADORN, Bay City	1879	1881
I. S. HAMILTON, Tecumseh	1874	1891
D. C. HAUXHURST, Battle Creek	1878	1882
S. L. HERRICK, Three Rivers	1868	1875
J. A. HEATON, Detroit	1869	1882
CHAS. HICKS, Plymouth	1882	1885
*HOMER O. HITCHCOCK, Kalamazoo	1870	1878
EDWARD M. HUME, Dearborn	1872	1877

* Ex-President.

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In Memoriam.

	Year Elected.	Time of Death.
R. C. HUTTON, Detroit	1878	1890
*RICHARD INGLIS, Detroit	1871	1875
*J. H. JEROME, Saginaw	1866	1883
D. A. JOY, Marshall	1883	1887
H. L. JOY, Marshall	1883	1892
AUGUSTUS KAISER, Detroit	1873	1894
A. H. KIMBALL, Battle Creek	1887	1594
AMASA F. KINNE, Ypsilanti	1878	1894
ALBERT E. LEETE, Romeo	1866	1878
*C. J. LUNDY, Detroit	1879	1892
HENRY F. LYSTER, Detroit	1866	1894
J. R. McGURK, Capac	1885	1894
NATHAN MITCHELL, Colon	1872	1879
WILLIAM MOTTRAM, Kalamazoo	1871	1891
DWIGHT NIMS, Jackson	1872	1879
*A. B. PALMER, Ann Arbor	1879	1888
GEO. C. PALMER, Flint	1893	1894
GEORGE C. PEASE, Fulton	1883	1895
ZINA PITCHER, Detroit	1864	1871
J. S. REEVES, East Tawas	1873	1878
*ABRAM SAGER, Ann Arbor	1866	1877
H. B. SHANK, Lansing	1870	1889
*CHAS. SHEPARD, Grand Rapids	1867	1893
H. P. SMITH, Mackinaw City	1885	1892
E. S. SNOW, Dearborn	1876	1892
CHAS. T. SOUTHWORTH, Monroe	1866	1884
ERASTUS SPAULDING, Grand Rapids	1880	1892
W. D. STEBBINS, Detroit	1867	1888
R. STEPHENSON, Adrian	1875	1890
J. M. SUTHERLAND, Caledonia	1884	1888
F. L. SUTHERLAND, Oscoda	1888	1888
J. W. SWITZER, Montague	1884	1888
HENRY TAYLOR, Mt. Clemens	1885	1889
*J. R. THOMAS, Bay City	1866	1883
A. A. THOMPSON, Flint	1885	1893
GEO. W. TOPPING, DeWitt	1866	1895
C. A. TUCKER, Coldwater	1874	1890
E. TWISS, Union City	1874	1895
C. V. TYLER, Bay City	1866	1889
FRANK WEBB, Alma	1873	1875
M. E. WHALEN, Paw Paw	1890	1895
*A. F. WHALEN, Hillsdale	1874	1890
JOHN B. WHITE, Saginaw	1886	1894
O. W. WIGHT, Detroit	1885	1888
S. M. WILKINS, Eaton Rapids	1875	1895
W A. S. WILLIAMS, Petoskey	1890	1893
WILLIAM WOOD, Grand Rapids	1890	1895
ELI WOODMAN, Farmington	1879	1892
L. C. WOODMAN, Paw Paw	1877	1883

* Ex-President.

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